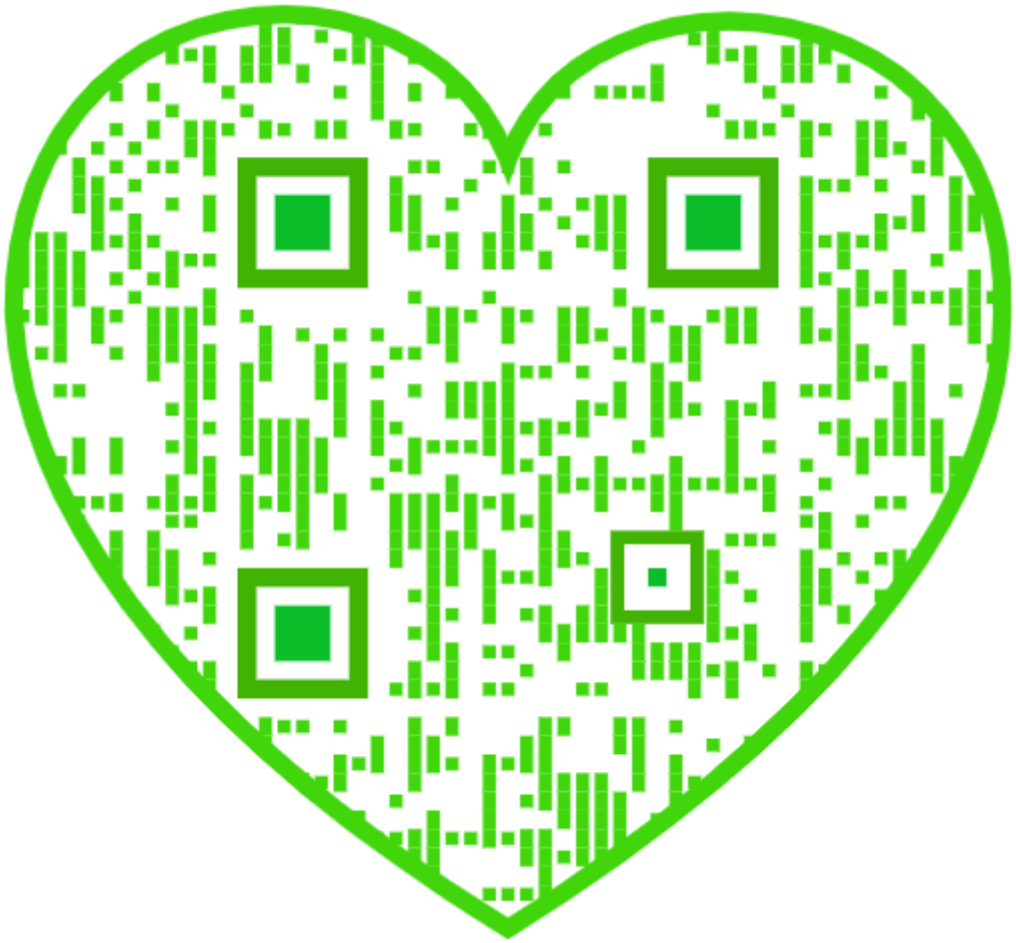

W. B. Clarke.

Drayton.

Abingdon.

CHEMICAL RECIPES.

CHEMICAL RECIPES.

Nearly One Thousand Modern Formulæ for producing all kinds of Colours and other Chemical Compositions, with full explanatory notes and instructions for Manufacture, etc.

BY

The Atlas Chemical Company, Sunderland.

SUNDERLAND:
PRINTED BY HILLS AND COMPANY, 19 FAWCETT STREET.
1896.

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THE GETTY CENTER
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PREFACE.

THE main object in view in publishing the present edition of *Chemical Recipes* is to place within the reach of Small Manufacturers, Managers, and Skilled Workmen the means of producing the different commodities for which Recipes are given, without putting them to the cost and difficulty (a difficulty which would in most cases be insurmountable) of erecting elaborate and costly plant and machinery. Although more interesting to the Manufacturer on a small scale, we have, however, little doubt that the more important firms extensively engaged in the manufacture of different Chemical products, may find at any rate, some useful hints and suggestions which in the hands of practical experts may be successfully dealt with. An important matter for the consideration of the Chemist of today is the fact (now more than ever admitted) that in producing Colours, Paints, and like compositions, those made from minerals are, in respect of permanency, superior, and in shade and brilliancy in every way equal to compositions made from the products of the animal and vegetable kingdoms. Moreover, as an immense amount of money has, during late years, been expended by capitalists in the thorough equipment of large numbers of mines containing almost inexhaustible stores of such precious commodities as Iron, Lead, Zinc, Cobalt, Manganese, Arsenic, Tin, Copper, Silver, and Gold, it becomes a probability that few, we think, will be disposed to deny that Mineral Colours are the Colours of the future.

One matter of the utmost importance in the preparation for use of Mineral Colours is the Calcination, and it is at this point, in our judgment, where the Paint and Colour

Manufacturer of the present day is at fault. He will not go to the trouble of erecting a small furnace, and by actual experience (for the knowledge can be gained in no other way) learn the method of blending the different minerals, and then by calcination producing the special tints of colour desired. At the first hasty glance a Paint, Soap, or Varnish Maker may feel disposed to turn away from the first part of the present volume, regarding it as being of interest only to those engaged in Ceramic Manufacture. That would be a mistake, and we trust the fact of our having in this brief preface called special attention to the matter, may have the effect of inducing subscribers engaged in the different branches mentioned, to read and study well the formulæ for the production of Colours given in the first part of the Book, and we are certain that by such means and a little judicious experimenting, they will in a short time become experts in the fascinating art of blending the different ores, and by careful calcination producing the most beautiful and permanent shades of Colour. We have done our utmost to present the various formulæ in such a manner that every purchaser will understand them ; there may, however, in some instances, be terms and descriptions used, as to the meaning of which some may not be quite sure, and in such cases our desire is that application may be made to us for explanation. Any aid we can render to purchasers of the Book will be willingly given, and far from feeling such inquiries irksome, we shall be pleased to find that interest is being aroused. That the Book may be found useful to those persons engaged in different branches of Chemistry into whose hands it may come, is our heartiest wish, and we desire, in concluding, to offer our most sincere thanks to the hundreds of well-known firms who have so cheerfully subscribed for copies of the work before being out of the press.

THE ATLAS CHEMICAL COMPANY.

Sunderland, April, 1896.

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Advertisements.

EXPLANATIONS
AND
ABBREVIATIONS.

"Run down."	Sufficient heat to melt into liquid.
"Glost Fire."	Ordinary Glaze Heat.
"Grind only."	No Calcination required.
"Hard Fire."	Highest Heat attainable.
"Frit."	The ingredients partly composing a Glaze, which require Calcination.
"Stone."	Always best Cornwall Stone.
"Paris White."	Superior quality of Whiting.
"Parts."	Always so many parts *by weight*, unless otherwise stated.
"D. L. Zinc."	Particular Brand not essential. Any good quality Oxide Zinc will do.

In many cases where particular colouring commodities, such as Prussian and Ultramarine Blues are specified, Colours made from the Recipes in this Volume may be substituted, some experiments being necessary in order to fix upon the particular colour most suitable.

The Advertisements in this Volume all emanate from firms of the very highest standing and repute, whose specialities may be relied upon as the best obtainable.

Part I.

Chemical Recipes.

Pigments.

A large number of different colours suitable for the use of painters and others, may be produced by mixing together various ores. The ores, if bought at first hand from the different mines, cost little; they should be procured in a rough ground state, the quantities of each as given in the following Recipes carefully weighed out and after being well mixed together should be calcined in crucibles or other pots, made of fire-clay. After calcination the mass requires grinding, and is then ready for use. Many minerals having little or no colouring power in themselves, are nevertheless important factors in producing the most beautiful shades of colour on being blended one with another, the colour being "brought out" by calcination.

The following are examples :—

Brown.

10 parts Crude Antimony.
12 ,, Litharge.
2 ,, Manganese.
1 ,, Oxide of Iron.

Red Brown.

12 parts Hematite Ore.
3 ,, Manganese.
7 ,, Litharge.
2 ,, Yellow Ochre.

Dove Colour.

12 parts Manganese.
5 ,, Steel Filings.
3 ,, Whiting.
1 ,, Oxide of Cobalt.

Grass Green.

10 parts Chrome Oxide.
2 ,, Tin Ashes.
5 ,, Whiting.
1 ,, Crocus Martis.
1 ,, Bichromate Potash.

Recipes for making Oxide Chrome, Crocus Martis, and Tin Ashes, will be found in another part of the book.

Purple.

8 parts Crocus Martis.
2 ,, Red Hematite.
1 ,, Oxide of Iron.

Yellow.

4½ parts Tin Ashes.
1 ,, Crude Antimony.
1 ,, Litharge.
1 ,, Red Ochre.

Buff.

3 parts Tin Ashes.
7 „ Crude Antimony.
8 „ Litharge.
2½ „ Calcined Alum.
1¼ „ Red Oxide Iron.

Orange.

8 parts Crude Antimony.
4 „ Tin Ashes.
3 „ Red Hematite.
6 „ Red Lead.
2 „ Calcined Alum.

Mulberry.

10 parts Manganese.
2 „ Cobalt Blue.
2 „ Saltpetre.

Orange Brown.

6 parts Red Lead.
3 „ Manganese.
6 „ Yellow Ochre.

Blue.

12 parts Borate of Lime.
6 „ Oxide of Zinc.
10 „ Litharge.
9 „ Felspar.
4 „ Oxide of Cobalt.

Claret.

21	parts	Oxide of Zinc.
4	,,	Crocus Martis.
4	,,	Oxide of Chrome.
3	,,	Red Lead.
3	,,	Boracic Acid.

Green.

20	parts	Litharge.
12	,,	Flint.
2	,,	Oxide of Copper.
2½	,,	Ground Glass.
2½	,,	Whiting.
1½	,,	Oxide of Chrome.

All the foregoing are cheaply produced, and serve for a variety of purposes. Mixed with Zinc or White Paint they are suitable for the use of house decorators. They may also be used for painting and printing on pottery, a transparent glaze being required to show the colours through. The colours also possess strong staining properties, and for this purpose may be advantageously used on bricks, tiles, glass, &c.

FUSIBLE ENAMEL COLOURS.

The following Colours are fusible by heat, and are all suitable for the decoration of china and glass. In this collection of Recipes certain terms are employed which may not be quite understood by persons who are not connected with either the Glass or Porcelain Industries, such as "Glost Fire," "Run

Down," and in such cases reference must be made to the Table of Explanations at the commencement of the book. It is generally supposed that in the manufacture of Enamel Colours (particularly the more costly sorts) the English Chemist cannot claim to have attained the high standard of excellence achieved by French and German experts. Whilst admitting that up to a few years ago there undoubtedly existed grounds for such supposition, it is an indisputable fact, that in late years English Colour Makers have advanced rapidly in the art. It should also be remembered that the Continental countries named, as well as Italy, Spain, and Belgium, have the advantage arising from the fact that those countries are rich in the possession of the raw materials used. Oxides and minerals, such as Cobalt, Zinc, Chalks, Felspar, and the like, are found in abundance, and of the very finest quality. But to compete successfully with his foreign rival, it only needs that the English Manufacturer should make himself acquainted with the best producers of the commodities required, purchase such commodities in the best market in their raw state, prepare and refine each ingredient himself, and with a fair amount of skill and care, the idea that the Britisher must of necessity take second place to any of his Continental competitors in the Science under consideration, will soon be dispelled. Variety of shade, tone, and hue, strength and durability, are the chief features a progressive Colour Maker must carefully study.

Ruby and Marone.

Preparation of Silver.

1 ounce Nitric Acid.
1 ,, Water.

Dissolve the Silver till saturated, then put a plate of Copper in the solution to precipitate the Silver in a metallic state. Wash well with water to remove the Acetate of Copper.

Flux for Above.

6 dwts. White Lead to 1 ounce Prepared Silver.

Tin Solution.

Put the Acid (Aqua Regia) in a bottle, add Tin in small quantities until it becomes a dark red colour; let it stand about four days before use. When the Acid becomes saturated it will turn red at the bottom of the bottle, then shake it up and put more Tin in it, let it stand and it will become clear.

Aqua Regia.

2 Nitric Acid.
1 Muriatic Acid.

Dissolve grain Gold in the Aqua Regia so as to make a saturated solution. Take a basin and fill it three-parts full of water; drop the solution of Gold into it till it becomes an amber colour. Into this solution of Gold gradually drop the solution of Tin, until the whole of the Cassin is precipitated. Wash the precipitate until the water becomes tasteless, then dry slowly and flux as follows:

No. 1 Flux.

3 Borax.
3 Red Lead.
2 Flint.

Run down.

Rose Mixture.

1 ounce Purple Cassin.
6 „ No. 1 Flux.
5 dwts. Prepared Silver.
2 ounces Flint Glass.

Grind.

Purple Mixture.

1 ounce Purple Cassin.
2½ „ No. 8 Flux.
2 „ Flint Glass.

Grind.

Ruby.

2½ Purple Mixture.
½ Rose „

And Grind.

Marone.

1 Rose Mixture.
2 Purple Mixture.

And Grind.

Black.

Extra Quality.

12 Red Oxide of Iron.
12 Carbonate of Cobalt.
1 Oxide of Cobalt.
80 Black Flux A.

Glost fire.

Black Flux A.

3 Red Lead.
½ Borax (Calcined).
1 Lynn Sand.

Run down.

Black No. 2.

1 Oxide of Copper.
½ Carbonate of Cobalt.
4 Flux No. 8.

Grind only.

White Enamel.

2½ Arsenic.
1½ Nitre.
4 Borax.
16 Flint.
16 Glass.
32 Red Lead.

Glost fire.

Blue Green.

8 Flint Glass.
25 White Enamel.
8 Borax.
24 Red Lead.
6 Flint.
2½ Oxide of Copper.

Glost heat.

Turquoise.

China.

5 Calcined Copper.
5 Calcined Whiting.
8 Phosphate of Soda.
16 Oxide of Zinc.
4 Soda Crystals.
2 Magnesia.
8 Red Lead.
52 Flux T.

Glost fire.

Flux T.

2 Borax.
1 Lynn Sand.

Run down.

Orange.

1 Orange U.G.
3 Flux No. 8.

Grind only.

Yellow Green.

4 Flint Glass.
2½ Whiting.
1½ Oxide of Chrome.

Fire hard,

then take

4 of above base.
2 of Flux No. 8.

Glost fire.

Coral Red.

1 Chromate of Potash.
1½ Sugar of Lead.

Dissolve in hot water, then dry ;

take

1 of above.
3 of Flux for Coral,

and Grind.

Flux for Coral.

4½ Red Lead.
1½ Flint.
1 Flint Glass.

Run down.

Turquoise.

5 Oxide of Copper.
10 Borax.
12 Flint.
14 White Enamel.
40 Red Lead.

Glost fire.

Flux No. 8.

6 Red Lead.
4 Borax.
2 Flint.

Run down.

Russian Green.

10 Malachite Green.
5 Yellow (enamel).
5 Majolica White.
2 Flux No. 8.

Grind only.

Amber.

1 Oxide of Uranium.
8 Coral Flux.

Grind only.

Gordon Green.

5 Yellow U.G.
15 Flux No. 8.
10 Malachite Green.

Grind only.

Celadon.

1 Light Enamel Blue.
1 Malachite Green.
15 No. 8 Flux.

Grind only.

Water Green.

Extra.

8 Flux No. 15.
3 Malachite Green.

Grind only.

Flux No. 15.

12½ Red Lead.
4 Oxide of Zinc.
3 Flint.
2 Boracic Acid.
2½ Calcination A.

Run down.

Calcination A.

100 Red Lead.
50 Oxide of Tin.

Run down.

Ivory.

1 Enamel Orange.
1 ,, Yellow.
½ ,, Pink.
¼ ,, Blue.
6 Flux No. 8.
4 Enamel White.

Grind only.

Dove Grounding.

2½ Enamel Blue.
4 ,, Rose.
8 ,, Black.
35 ,, Flux No. 8.
60 ,, White.

Grind only.

Blue No. 1.

64 Flint Glass.
20 Red Lead.
4 Pearl Ash.
4 Common Salt.
8 Cobalt Oxide.
8 Enamel White.

Glost fire.

Take

1 of above base.
1 of Flux No. 8.

Grind only.

Red Brown.

1 Sulphate of Iron (fired).
3 Flux No. 8.
Grind only.

French Brown.

1 Coffee Brown U.G.
1 Flux No. 8.

Grind only.

Fawn.

1 Vandyke Brown U.G.
3 Flux No. 8.

Grind only.

Mauve.

4 Best Rose.
1 „ Blue.

Grind only.

Magenta.

8 Best Rose.
1 Enamel Blue.
2 „ Marone.

Glost fire.

Dark Red.

1 Sulphate of Iron.
1 Calcined Copperas.
6 Flux No. 8.

Grind only.

Matt Blue.

10½ Flux No. 8.
5 Oxide of Zinc.
4 Oxide of Cobalt.

Glost fire.

Take

1 of above base.
1⅛ of Flux No. 8.

Grind only.

Chrome Green.

10 Calcined Borax.
4½ Oxide of Chrome.
18 Flux No. 8.
8 Matt Blue.
1 Oxide of Tin.

Glost fire.

Chrome Green.

10 Enamel Blue.
4½ Oxide of Chrome.
1 Carbonate of Zinc.
2 Flint.
9 Borax.
2 Flux No. 8.

Glost fire.

Yellow No. 2.

1 Yellow U G.
3 Flux No. 8.

Grind only.

French Brown.

1 Claret Brown,
¼ Enamel Red.
3 Flux No. 8.

Grind only.

Blue.

9 Flint.
13 Oxide of Zinc.
2 Oxide of Cobalt.
1 Phosphate of Soda.

Hard fire,

then take

1 of above base.
1¼ of Flux No. 8.

Grind only.

Yellow Green.

16 Red Lead.
6 Flint.
1½ Oxide of Copper.
1 Borax.

Glost fire,

then take

2 of above base.
1 Enamel Yellow.

Grind.

Fawn.

1 Vandyke Brown U.G.
⅛ Enamel Orange.
3¼ Flux No. 8.

Grind only.

Celeste.

3 Enamel Blue.
2 ,, White.
2 Florentine Green.

Grind only.

Flux No. 9.

28 Borax.
16 Flint.
16 Red Lead.

Run down.

Florentine Green.

14 Prepared Blue.
9½ Oxide of Chrome.
20 Flux No. 9.
20 Borax.

Calcine easy in glost heat, then grind, and fire again, hard glost.

Prepared Blue.

18 Flux No. 9.
10 Oxide of Zinc.
1 Glass.
8 Cobalt Oxide.

Glost fire.

Common Red.

Fire Copperas in kiln until it becomes a light brown tint, then wash for 30 times in cold water.

Take

1 of above base.
3 of Flux No. 8.
½ of Yellow.

Grind only.

Drab.

3 Enamel Fawn.
2 ,, Blue.
1 ,, Florentine Green.
2 ,, White.

Grind only.

Grounding Chrome.

3 Florentine Green
2 Yellow Enamel.
1 Oxide of Chrome.

Grind only.

Black.

1 Black Oxide of Copper.
1/4 Carbonate of Cobalt.
3 Flux No. 8.

Easy fire.

Turquoise Base.

20 Flint.
15 Carbonate of Soda.
3 Oxide of Copper.

Glost fire.

Take

1 of above base.
3 of Flux as follows.

Turquoise Flux.

23 Tin Ash.
14 Flint.
7 Carbonate of Soda.
7 Borax.
1½ Nitre.

Glost fire.

Blue No. 100.

40 Flint Glass.
20 Red Lead.
8 Calcined Borax.
2½ Oxide of Cobalt.

Glost fire.

Blue No. 101.

1 Cobalt Oxide.
4 Calcined Borax.
20 Flint Glass.
10 Red Lead.

Glost fire.

Flux No. 50.

27 Red Lead.
14 Boracic Acid.
4¼ Flint.

Run down.

Matt Blue A.

1 Oxide of Cobalt.
2 ,, of Zinc

Hard fire.

Take

1 of above base.
1 of Flux No. 50.

Matt Blue B.

3 Oxide of Zinc.
1 ,, of Cobalt.

Hard fire.

Take

3 of Flux No. 50.
2 of above base.

Pomona Green.

1 Oxide of Chrome.
2½ Flux No. 69.
1½ Flux No. 72.

Grind only.

Enamel Black.

4 Calcined Borax.
2 ,, Umber.
2½ Red Lead.
2 Enamel Blue.
1 Flint.
1 Carbonate of Cobalt.

Glost fire.

Flux No. 69.

1 Red Lead.
6 Flint Glass.
3 Borax.
3 Flint.

Run down.

Black.

14 Oxide of Copper.
7 " Cobalt.
2 Carbonate Cobalt.
63 Black Flux.

Easy fire.

Flux No. 72.

25 Tin Ash.
14 Flint.
7 Carbonate of Soda.
7 Borax.
1½ Nitre.

Glost fire.

Flux No. 73.

1 Flint Glass.
1 Red Lead.
1 Borax.

Run down.

Black Flux.

1 Borax.
1 Red Lead.
1 Flint Glass.

Glost fire.

Purple Brown.

1 Pink underglaze.
1 Brown ,,
6 Flux No. 8.

Grind only.

Purple Brown.

32 Flint.
5 Borax.
5 Pearl Ash.
5 White Lead.

Glost fire.

Take

1 of above base
1⅛ of Flux No. 8.

Grind only.

Flux No. 95.

3 Red Lead
1 Flint.

Glost fire.

Blue Green.

32 Red Lead.
12 Flint.
2 Borax.
1½ Oxide of Copper.

Glost fire.

Yellow Green.

1 Victoria Green.
¼ Enamel White.
¼ ,, Yellow.

Glost fire.

Nasturtium.

1 Chromate of Lead.
2 Flux No. 8.
2 Flux No. 95.

Yellow Coral.

1 Chromate of Lead.
3 Coral Flux.

Grind only.

Flux for Yellow Coral.

40 Red Lead.
10 Flint.
2½ Borax.

Run down.

Lining Green.

5 Yellow Underglaze.
15 Flux No. 8.
10 Florentine Green.

Grind only.

Marine Green.

3 Florentine Green.
1 Enamel Yellow.

Grind only.

Chinese Yellow.

2 Orange Underglaze.
30 Flux No. 8.

Grind only.

Yellow Brown.

3 Enamel Orange.
1½ Maize.

Grind only.

Maize.

1 Chinese Brown U.G.
5 Flux No. 8.

Grind only.

Black.

1 Oxide of Cobalt.
1 Crocus Martis.
8 Black Flux.

Glost fire

Chocolate.

4 Crocus Martis.
12 Flux No. 8.

Glost fire.

Sea Green.

3 Florentine Green.
1 Black Flux.

Grind only.

Water Green.

Common.

8 Flux No. 8.
3 Malachite Green.

Grind only.

Blush Pink.

1 Crimson Laque.
2 Flux No. 8.

Grind only.

Royal Blue.

40 Pure Ammonia Alum.
10 ,, Oxide of Zinc.
3½ ,, Oxide of Cobalt.

Fire hard.

Then take

1 of above base.
2½ Flux No. 50.

Grind.

Rose Colour.

Tin Solution.

$2\frac{2}{3}$ drms. Nitric Acid.
$3\frac{1}{6}$ drms. Muriatic Acid.
7 drms. Water.
5 dwts. Grain Tin.

Put together in a cup covered.

Gold Solution.

3 drms. Muriatic Acid.
3 drms. Nitric Acid.
2 dwts. Yellow Gold.

Put together in a cup covered until all is dissolved.

Take 5 half-pints of cold water in a basin, then add all the Tin Solution and mix well with a glass rod; then add all the Gold Solution drop by drop, and stir 20 minutes; then let it stand 18 hours covered up; then fill the basin with boiling water and let it stand 6 hours; then wash the sediment 10 times in boiling water, and add

35 grains Oxide Silver.
1 pound Rose Flux.
1 ,, Flux No. 8.

Grind together in the slop state and dry for use.

Purple.

1 dwt. Yellow Gold.
1½ drms. Nitric Acid.
1½ ,, Muriatic Acid.

Put together in a cup.

10 dwts. Grain Tin.
5¾ drms. Nitric Acid.
6¾ ,, Muriatic Acid.
14 ,, Water.

Put together in a cup.

When these are dissolved take 5 half-pints of cold water in a gallon jug and put together as in Rose Colour, only when the jug has been filled up

with hot water and stood 6 hours add ¼lb. Pearl Ash dissolved in a pint of hot water, then wash as in Rose. Pour off the water and add ½lb. of Purple Flux, 7½ grs. Oxide Silver liquid together, then roast it and grind again for use.

Red.

3 Sulphate Iron.
1 Underglaze Orange.

Glost fire.

Then take

1 of above.
3 of No. 8 Flux.

Turkish Blue.

40 pure Ammonia Alum.
3 Oxide Cobalt.
½ Oxide Zinc.
½ Carbonate Soda.

Calcine twice at hard biscuit heat, then put through a very fine sieve, and wash 40 or 50 times in hot water.

Then take

1 of foregoing base.
3 of Flux S.F.

And grind.

Flux S.F.

3 Borax.
1 Flint.

Run down.

Alum for above from Ede Háen, List, Hanover.

White Enamel.

16 Flint Glass.
1½ Arsenic.
1 Nitre.
4½ Red Lead.

Run down.

Bronze Green.

12 Flint Glass.
27 Red Lead.
9 Borax.
6 Flint.
2 Oxide Copper.
2 ,, Chrome.

Run down.

Then take

1 of above base.
3 of No. 8 Flux.

Black.

10 Oxide Copper.
10 ,, Cobalt.
8 ,, Manganese.
100 ,, No. 8 Flux.

Run down.

Chrome Red.

9 Red Lead.
3 Chromate Lead.
2 No. 8 Flux.

Run down.

Chrome Green.

3 Oxide of Chrome.
1 ,, of Copper.
1 Carbonate Cobalt.
2 Felspar.

Hard fire and wash.

Then take

1 of above base.
3 of Flux as follows.

And grind.

Flux for Chrome Green.

4 Red Lead.
1¼ Flint Glass.
1 Flint.

Run down.

Turquoise.

20 Flint.
15 Carbonate Soda.
3 Oxide Copper.

Glost fire.

Then take

1 of above base.
3 of Flux as follows.

And fire glost heat.

For Turquoise.

23 Tin Ash.
14 Flint.
7 Carbonate Soda.
7 Borax.
1½ Nitre.

Run down.

Purple Brown.

2 Crocus Martis.
2 Red Oxide Iron.
1 Litharge.
12 Flux No. 8.

Low fire.

Yellow Brown.

2½ parts Oxide Tin.
2 ,, ,, Zinc.
2 ,, Red Oxide Iron.

Hard fire.

Then take

1 of above base.
2½ Flux No. 8.

And grind.

Dark Blue.

2 White Enamel.
2 Carbonate Cobalt.
¼ Muriate of Soda.
¼ Pearl Ash.
6 Red Lead.
16 Flint Glass.

Glost heat.

Light Bronze Green.

6 Oxide Chrome.
1 Carbonate Cobalt.
4 Felspar.

Fire hard.

Then take

1 of above base.
3 of No. 8 Flux.

And grind.

Rose Flux.

1 pound Stone.
2 ,, Flint.
2 ,, Red Lead.
3 ,, Borax.
3 ,, Glass.
1 ounce Nitre.

Run down.

Purple Flux.

4 Red Lead.
3 Flint Glass.
1½ Borax.
1 Pearl Ash.
1 Flint.

Run down.

White No. 1.

16 parts Flint Glass.
5 ,, Red Lead.
1 ,, Arsenic.
1 ,, Nitre.

Easy fire.

White No. 2.

16 parts Flint Glass.
4 ,, Red Lead.
1½ ,, Oxide Tin.
1½ ,, Nitre.

Easy fire.

Yellow Green.

10 parts Flint Glass.
6 ,, Flint.
8 ,, Borax.
26 ,, Red Lead.
1¾ ,, Oxide Copper.
5 ,, underglaze Yellow.

Easy fire.

Blue.

6 parts Flint.
4 ,, Salt Tartar.
6 ,, Red Lead.
6 ,, Flint Glass.
2 ,, Salt.
2 ,, Oxide Cobalt.

Easy fire.

White No. 3.

4 parts Flint.
24 ,, Red Lead.
2 ,, Arsenic.
2 ,, Nitre.
5 ,, Flint Glass.

Easy fire.

Sea Green.

6 parts Oxide Chrome.
16 ,, Borax.
2 ,, Enamel Blue.
2 ,, Flint.
4 ,, Red Lead.

Easy fire.

Black.

3½ parts Oxide Cobalt.
1 ,, Manganese.
10 ,, Red Lead.
2 ,, Flint.

Easy fire.

Red.

2 parts Ammonia Alum.
1 ,, Sulphate Iron.

Calcine and Wash.

1 of above base.
3 Flux No. 8.

Chrome Red.

1 part Chromate Lead.
1½ ,, Flint Glass.
1½ ,, Flux No. 8.

Easy fire.

Olive Green.

4 parts Oxide Chrome.
1½ ,, ,, Copper.
½ ,, ,, Cobalt.

Easy fire.

1 of above base.
3 Flux No. 8.

Underglaze Colours.

Pink.

26 Oxide of Tin.
14 Whiting.
1 Potash.

Hard fire.

Unique.

64 Oxide of Tin.
2 Whiting.
1 Potash.
3 Cobalt Oxide.
4 Boracic Acid.

Hard fire.

Olive Green.

16 French Green.
1 Cobalt Oxide.

Grind only.

French Green.

5 Whiting.
25 Potash.
3 Cobalt Oxide.
46 Flint.
12 Borax.
10 Oxide of Zinc.
12 Plaster of Paris.

Hard fire.

French Greens are best fired in well-flinted vessel to avoid waste.

Black.

3 Cobalt Oxide.
2 Flint.
1 Borax.
12 Chromate of Iron.
1 Iron Scales.
1 Oxide of Nickel.

Hard fire.

Victoria Green.

16 Whiting.
17 Potash.
25 Flint.
7 Red Lead.
8 Fluor Spar.
6 Plaster of Paris.

Hard fire.

Wash Victoria Green well 20 times in boiling water.

Purple.

16 Pink underglaze.
1 Cobalt Oxide.

Grind only.

Red Brown.

3 Pink.
1 Common Brown.

Grind only.

Peach.

4 Oxide of Tin.
4 Whiting.
1 Cobalt Oxide.
2 Flint.
5 Pink.

Hard fire.

Common Brown.

2 Oxide of Zinc.
2 Chromate of Iron.
1 Red Lead.

Glost fire.

Claret Brown.

2 Potash.
2 Flint.
4 Zinc Oxide.
1 Iron Scales.

Hard fire.

Yellow.

3 Oxide of Tin.
10 Red Lead.
6 Crude Antimony.

Glost fire.

Orange.

3 Oxide of Tin.
12 Red Lead.
7 Crude Antimony.
4 Crocus Martis.

Glost fire.

Dove.

8 Whiting.
3 Cobalt Oxide.
40 Flint.
8 Borax.
10 Black Colour.
24 Stone.

Neutral.

3 Cobalt Oxide.
3 Common Brown.
4 French Green.
17 Flux No. 18.

Grind only.

Flux No. 18.

5 Whiting.
5 Flint.
4 Borax.
12 Stone.

Hard fire.

Mulberry.

8 Oxide of Tin.
5 Oxide of Cobalt.
4 Borax.
20 Manganese.
4 Stone.

Hard fire.

Olive Green.

3 Oxide of Chrome.
2 ,, Zinc.
5 Flint.
1 Cobalt Oxide.
2½ Borax.

Hard fire.

Canton Blue.

3 Cobalt Oxide.
2 Whiting.
1 Flint.

Grind only.

Coffee Brown.

1 Chromate of Iron.
1½ Oxide of Zinc.
½ Red Lead.

Hard fire.

Matt Blue.

20 Pure Aluminia*
5 Oxide of Zinc.
1½ Oxide of Cobalt.
¾ China Clay.

Hard fire.

*Wash the Aluminia 20 times in boiling water.

Chocolate.

3 Pink.
1 Common Brown.

Grind only.

Yellow.

12 White Lead.
2 Antimony.
1 Crude Sal Ammonia.
2 Alum.

Glost fire.

Black.

2 Odd Colours*
12 Chromate of Iron.
3½ Cobalt.

Hard fire.

*Any kind of odd dark colours will do.

Flowing Green.

16 French Green.
1 Cobalt Oxide.
1 Whiting.

Grind only.

Orange.

6 Litharge.
4 Crude Antimony.
2 Crocus Martis.
1 Oxide of Tin.

Hard fire.

Plum.

16 Pink.
2 Whiting.
2 Cobalt.

Grind only.

Grass Green.

3 Olive Green.
8 Oxide of Chrome.
1 Cobalt Oxide.
4 Whiting.

Easy fire.

French Green.

7½ Flint.
10 Borax.
2½ Zinc.
2½ Oxide of Chrome.
1 Cobalt Oxide.

Hard fire.

Buff.

5 Yellow underglaze.
5 Orange underglaze.

Grind only.

Apple Green.

5 Flint.
3 Whiting.
8 Oxide of Chrome.
4 Fluor Spar.

Hard fire.

Mulberry No. 1.

4 Flint.
6 Manganese.
1 Cobalt Oxide.
1 Whiting.
3 Red Lead.
1 French Green.

Mulberry No. 2.

4 Flint.
4 Manganese.
4 White Lead.
1 Cobalt Oxide.
1 Whiting.

Hard fire.

Purple.

14 Marone Pink.
9 Flint Glass.
1¾ Cobalt Oxide.

Glost fire.

Light Willow Blue.

10 Cobalt Oxide.
2 Whiting.
2 Flux No. 8.

Edging Blue.

4¼ Cobalt Oxide.
7½ Pitchers.
2½ White Lead.

Hard fire.

Blue Green.

5 Oxide Chrome.
4 ,, Zinc.
2 ,, Cobalt.
8 Flint.
5 Borax.

Glost fire.

Vandyke Brown.

5 Alum.
2 Oxide Zinc.
1 Potash.
½ Iron Scales.

Hard fire.

Red Brown.

3 Pink U.G.
1 Coffee Brown.

Grind only.

Claret Brown P.

40 Zinc Oxide.
6 Crocus Martis.
6 Oxide Chrome.
5 Litharge.
5 Boracic Acid.

Hard fire.

Canton Blue.

1 Cobalt Oxide.
2 French Green.
1 Black Colour.
1 Whiting.

Grind only.

Flowing Blue No. 1.

2 Oxide Cobalt.
1 Flux No. 72.

Grind only.

Flowing Blue No. 2.

1 Oxide Cobalt.
1 Flux No. 72.

Grind only.

Flux No. 72.

4½ Whiting.
1¼ Flint.

Broseley Blue.

10 Flux No. 72.
1 Oxide Cobalt.

Grind only.

Flowing Powder.

2 Whiting.
1 Chloride of Lime.

Grind only.

Flowing Green.

2 French Green
1 Willow Blue.

Grind only.

Mauve.

200 Oxide Tin.
20 Boracic Acid.
3 Chromate Lead.

Glost fire.

Dark Brown.

4 Iron Scales.
8 Calamine.
6 Manganese.
2½ Oxide Chrome.

Grind only.

Lining Green.

1 Oxide Chrome.
1 Victoria Green

Grind only.

Marone Pink.

40 Oxide Tin.
20 Whiting.
1 Oxide Chrome.
3 Flint Glass.

Hard fire.

Black.

20 Chromate Iron.
5 Blue Chippings.
1¼ Red Lead.
1¼ Oxide of Cobalt.

Hard fire.

Blue Chippings.

120 Granite Pitchers.
20 Black Colour.
50 Red Lead.
10 Oxide of Cobalt.

Hard fire.

French Green.

Best.

33½ Flint.
23 Oxide Chrome.
20 Tincal.
20 Oxide Zinc.
10 Soda Crystals.
5 Oxide of Cobalt.

Hard fire.

Fire in saggars, well coated with flint, to avoid waste.

Black.

Extra Quality.

12 Chromate Iron.
1 Iron Scales.
2 Oxide Nickel
2 ,, Tin.
5 ,, Cobalt.
1 Carbonate Cobalt.
1¼ ,, Soda.

Hard fire.

Dark Brown.

1 Oxide Manganese.
6 Chromate Iron.

Canton Blue No. 1.

8 Oxide Cobalt.
1 Flint.
3 Whiting.

Grind only.

Flowing Slate.

2 Oxide Cobalt.
2 Chromate Iron.
2 Flint.
1 Manganese.

Grind only.

Canton Blue No. 2.

3 Oxide Cobalt.
2¼ Whiting.
¾ Flint.

Grind only.

Willow Blue.

5 Oxide Cobalt.
7½ Whiting.
2½ Flint.

Grind only.

Indian Blue.

10 Oxide Cobalt.
1½ Black.
7½ Whiting.
2½ Flint.

Grind only.

Fawn

3 Marone Pink.
1 Orange.

Grind only.

Yellow.

Best.

1 Red Lead.
4 Tin Ash.
1 Antimony.

Glost fire.

Buff.

4 Tin Ash.
1 Antimony.
1 Red Lead.
4 Oxide Iron.

Glost fire.

Dove.

6 parts Oxide Nickel.
2 ,, ,, Cobalt.
1 ,, ,, Chrome.
18 ,, Flint.
3 ,, Whiting.

Glost fire.

Orange.

6 parts Red Lead.
4 ,, Antimony.
3 ,, Tin Ash.
1½ ,, Oxide Iron.

Glost fire.

Marone Pink.

10 pounds Tin.
4 ,, Whiting.
1½ ,, Fluor Spar.
4 ,, Flint.
6 ounces Bi-carbonate Potash.

Hard fire.

Dissolve the Potash in hot water, and when all the other materials have been thoroughly mixed, drop the liquid Potash among it and mix all again.

Drab.

3 parts Orange U.G.
1 ,, Black U.G.

Grind only.

Mauve.

20 pounds Oxide Tin.
2½ ,, Borax.
¼ ,, Potash.

Hard fire.

Unique.

19½ parts Mauve.
½ ,, Oxide Cobalt.

Grind only.

Banding Matt Blue.

20 parts Best Matt Blue.
1 ,, China Pitchers.

Grind only.

Vandyke Brown.

30 parts Chromate Iron.
20 ,, Manganese.
4 ,, Oxide Tin.

Hard fire.

Hair Brown.

1 part Coffee Brown.
1 ,, Chromate Iron.

Grind only.

Chinese Brown.

12	parts	Oxide Zinc.
2	,,	Litharge.
2	,,	Boracic Acid.
2¼	,,	Oxide Chrome.
2½	,,	Red Oxide Iron.

Hard fire.

Pasture Green.

6	parts	Oxide Chrome.
4	,,	Whiting.
2	,,	Potash.
¼	,,	Oxide Cobalt.

Common Brown.

35	parts	Chromate Iron.
20	,,	Oxide Manganese.
10	,,	Flint.
7½	,,	Cornwall Stone.
6	,,	Tincal.

Hard fire.

Finest Matt Blue.

Calcine a quantity of Potash Alum, and also Ammonia Alum on kiln bottom separately. Then mix

3	parts	Potash Alum
1	,,	Ammonia Alum.

Pound extremely fine and then fire very hard.

When fired pound again, this time as finely as possible, then wash it in boiling water 36 times.

Take

40 parts of above base.
20 ,, of Oxide Zinc.
2 ,, of Cobalt.

Fire hard twice.

Flux for Blues.

12 parts Flint.
12 ,, Stone.
5 ,, Whiting.
4 ,, Borax.

Hard fire.

Another.

12 parts Stone.
5 ,, Flint.
1 ,, China Clay.
3¾ ,, Whiting.
3¾ ,, Borax.

Hard fire.

Dark Green.

14 parts Flint.
10 ,, Potash.
4 ,, Whiting.
4 ,, Borax.
10 ,, Old Plaster.
2 ,, Oxide Cobalt.

Hard fire.

Blue.

60 parts Pure Aluminia.
30 ,, Carbonate Zinc.
3 ,, Oxide Cobalt.
4 ,, No. 8 Flux.

Very hard fire.

Claret Brown H.

2 parts Oxide Zinc.
1 ,, Potash.
½ ,, Iron Scales.

Hard fire.

Yellow.

15 parts Alum.
9 ,, Red Lead.
6 ,, Crude Antimony.
3 ,, Oxide of Tin.

Rather hard fire.

Peach.

1 part Oxide Cobalt.
5 ,, Pink Colour.
7 ,, Pink Flux.

Grind only.

Pink Flux.

1 part Oxide of Tin.
1 ,, Stone.
½ ,, Whiting.

Hard fire.

Mazarine Blue No. 1.

4 parts Whiting.
15 ,, Oxide Cobalt.
1 ,, Red Lead.
4 ,, Flint Glass.
1 ,, Nitre.

Easy fire.

Mazarine Blue No. 2.

4 parts Oxide Cobalt.
5 ,, Stone.
13 ,, Red Lead.
1 ,, Flint.
1 ,, Carbonate Soda.

Easy fire.

Unique.

26 parts Pink.
8 ,, Mixture A.

Fire hard.

Mixture A.

8 parts Cobalt.
24 ,, Calcined Bone.
12 ,, Borax.

Mixed only.

Violet.

5 parts Flint.
4 ,, Tartar.
2 ,, Red Lead.
½ ,, Manganese.

Glost fire.

Yellow Green.

4 parts Glass.
2½ ,, Whiting.
1½ ,, Oxide Chrome.
1 ,, Tin Ash.

Hard fire.

Turquoise.

6 parts China Clay.
6 ,, Oxide Zinc.
1½ ,, ,, Cobalt.
1 ,, Paris White.
¼ Oxide Chrome.

Hard fire.

Sage Green.

1 part Oxide Nickel.
½ ,, ,, Chrome.
1 ,, Flint.
1 ,, Paris White.

Hard fire.

Imperial Blue.

40 parts Pure Aluminia.
10 ,, Oxide Zinc.
6 ,, ,, Cobalt.
4 ,, Lynn Sand.
1 ,, Carbonate Soda.

Hard fire.

Blue Green.

3 parts Oxide Chrome.
4 ,, ,, Zinc.
3 ,, ,, Cobalt.
8 ,, Flint.

Hard fire.

Dark Blue.

2 parts Oxide Cobalt.
2 ,, Felspar.
6½ ,, Lynn Sand.
2 ,, Flint Glass.

Hard fire.

French Green.

8 parts Flint.
6 ,, Oxide Chrome.
5 ,, Lynn Sand.
5 ,, Oxide Zinc.
2½ ,, Soda.
2 ,, Oxide Cobalt.

Hard fire.

Sage.

2½ parts Flint.
1¼ „ Soda.
1 „ Oxide Chrome.

Hard fire.

Red Brown.

4 parts Manganese.
1 „ Red Oxide Iron.
2 „ Oxide Chrome.
2 „ Sulphate Barytes.

Hard fire.

Peacock Blue.

4 parts Oxide Chrome.
3 „ „ Zinc.
2 „ „ Cobalt.
6 „ Flint.
6 „ Lynn Sand.

Adelaide Brown.

1 part Chromate Iron.
1 „ Oxide Zinc.

Hard fire.

Bronze Green.

1 part Oxide Chrome.
1 „ Felspar.
2 „ Flint.
1 „ Paris White.

Hard fire.

Blue Grey.

5 parts Oxide Nickel.
3 ,, ,, Zinc.
½ ,, ,, Cobalt.

Hard fire.

Chocolate.

5 parts Oxide Zinc.
10 ,, Copperas.
5 ,, Chromate Iron.
5 ,, China Clay.
5 ,, Bi-chromate Potash.

Moderate fire.

Pink.

10 parts Oxide Tin.
5 ,, Paris White.
½ ,, Bi-chromate Potash.
½ ,, Flint.

Hard fire.

Hair Brown.

3 parts Copperas.
1 ,, Oxide Zinc.
1 ,, Bi-Chromate Potash.
1 ,, Yellow Ochre.

Hard fire.

Crimson.

3 parts Oxide Tin.
2 ,, Paris White.
¾ ,, Chromate Lead.
¼ ,, Oxide Chrome.

Hard fire.

Drab.

5 parts Oxide Nickel.
2½ ,, Manganese.
5 ,, Iron Scales.
2½ ,, Oxide Cobalt.

Hard fire.

Mulberry.

4 parts Oxide Manganese.
1 ,, ,, Cobalt.
1 ,, Flint.
1 ,, Paris White.
½ ,, Strong Pink.

Hard fire.

Orange.

6 parts Litharge.
3 ,, Tin Ash.
2 ,, Crocus Martis.
2 ,, Oxide Zinc.

Glost fire.

Strong Pink.

18 parts Oxide Tin.
9 ,, Whiting.
1 ,, Chromate Lead.
1 ,, Bi-chromate Potash.

Hard fire.

Majolica Colours.

Soft Glaze or Flux.

35	parts	Red Lead.
16¼	,,	Lynn Sand.
12½	,,	Cornwall Stone.
6¼	,,	Refined Borax.
2½	,,	Whiting.
1¼	,,	Nitre.

Run down.

Turquoise.

10	parts	Flint Glass.
15	,,	Red Lead.
6	,,	Borax.
8	,,	Flint.
2	,,	Oxide Copper.
8	,,	,, Tin.

Glost fire and flux with soft glaze to suit.

White.

25 parts Felspar.
18 ,, Borax.
12 ,, Oxide Tin.
2 ,, Lynn Sand.

Run down. Then take

8 parts of above.
1½ ,, Flux No. 8.

Grind only.

Transparent Orange.

60 parts Red Lead.
20 ,, Red Marl.
4 ,, Flint.

Run down and grind.

Crimson No. 1.

7 parts Soft Glaze.
2 ,, Crimson U.G.

Grind only.

Mazarine Blue.

30 parts Flint Glass.
4½ ,, Potash.
3 ,, Oxide Cobalt.

Run down. And take

24 pounds of above.
18 ,, Soft Glaze.
6 ,, Cornwall Stone.

Frit in flinted saggars in glost heat, and grind for use.

Mauve.

1 part Unique.
3 ,, Soft Glaze.

Grind only.

Violet.

12 ounces Unique.
4 ,, Pink.
3 pounds Soft Glaze.

Grind only.

Dark Blue.

6½ parts Borate of Lime.
18½ ,, Red Lead.
9½ ,, Felspar.
3 ,, Lynn Sand.
2 ,, Oxide Cobalt.

Run down and grind.

Dark Green.

36 parts Red Lead.
16 ,, Flint.
10 ,, Borate of Lime.
11 ,, Felspar.
5⅔ ,, Oxide Copper.

Run down and grind.

Pink.

Opaque.

1 part Pink U.G.
1 ,, Majolica White.
4 ,, Soft Glaze.

Grind only.

Yellow or Pea Green.

9 parts White Lead.
2 ,, Victoria Green.
1 ,, Flint.
1 ,, Frit for Granite Glaze.

Grind only.

Light Blue.

2 pounds Majolica White.
1½ ,, Soft Glaze.
1 ,, Mazarine Blue.

Grind only.

Crimson No. 2.

1 part Crimson U.G.
8½ ,, Soft Glaze.

Purple Opaque.

1 part Purple (as follows).
1 ,, White.
4 ,, Soft Glaze.

Grind only.

Purple.

For preceding Recipe.

2 ounces Oxide Cobalt.
2½ pounds Pink U.G.

Well mixed and used in proportions as above.

Chocolate.

40 parts Flint Glass.
4 ,, Oxide Manganese.

Run down. Take

12 parts of above.
12 ,, of Soft Glaze.

Grind only.

Dark Green.

3½ parts Red Lead.
1½ ,, Flint.
1 ,, Borate of Lime.
1 ,, Felspar.
5½ ,, Oxide Copper.

Calcine. Take

1 part of above.
10 ,, Soft Glaze.

Grind only.

Amethyst Green.

4 parts Silver Grey.
2 ,, Dark Green.
1 ,, Yellow.
1 ,, Brown.

Grind only

Light Green.

2½	parts	Red Lead.
1½	,,	Borax.
½	,,	Soda.
1½	,,	Felspar.
1½	,,	Flint.
½	,,	Glass.
½	,,	Whiting.
4	,,	Oxide Copper.

Run down.

Dark Orange.

3	parts	Red Lead.
1	,,	Calcined Alum.
¾	,,	Red Oxide Iron.
2	,,	Tin Ash.
4	,,	Crude Antimony.

Calcine on flinted plates about rose heat and take

2	parts	of above base.
6	,,	of Soft Glaze.

Grind only.

Chestnut Brown.

1	part	Claret Brown.
4	,,	Soft Glaze.

Grind only.

Violet No. 2.

18 parts Red Lead.
9 ,, Flint.
6 ,, Cornwall Stone.
3 ,, Borax.
1 ,, Pearl Ash.
3 ,, Manganese.

Run down.

Blue Green.

75 parts Sand.
50 ,, Soda.
50 ,, Oxide Copper.
5 ,, Pearl Ash.
5 ,, Salt.

Calcine, glost heat, and mix with Soft Glaze to suit.

Silver Grey.

9 pounds Red Lead.
4 ,, Flint.
3 ,, Borate of Lime.
1½ ,, Felspar.
1 ,, Cornwall Stone.
¾ ,, Oxide Copper.
¾ ,, ,, Manganese.
3 ounces Cobalt.
6 ,, Red Oxide Iron.

Run down. Then take
6 parts of above.
6 ,, of Soft Glaze.

Grind only.

China Bodies.

ORDINARY.

No. 1.

2½ parts China Clay.
1½ ,, Stone.
3 ,, Bone.

No. 2.

5 parts China Clay.
2½ ,, Stone.
7 ,, Bone.
3 ,, Barytes.

No. 3.

5 parts China Clay.
3 ,, Stone.
¼ ,, Flint.
8 ,, Barytes.

SUPERIOR.

No. 1.

35 parts China Clay.
23 ,, Stone.
40 ,, Bone.
2 ,, Flint.

No. 2.

35 parts China Clay.
8 ,, Stone.
50 ,, Bone.
3 ,, Flint.
4 ,, Blue Clay.

No. 3.

20 parts China Clay.
40 ,, Stone.
40 ,, Bone.

No. 4.

8 parts China Clay.
40 ,, Stone.
29 ,, Bone.
5 ,, Flint.
18 ,, Blue Clay.

No. 5.

32 parts China Clay.
23 ,, Stone.
34 ,, Bone.
6 ,, Flint.
5 ,, Blue Clay.

No. 6.

7 parts China Clay.
40 ,, Stone.
28 ,, Bone.
5 ,, Flint.
20 ,, Blue Clay.

FINEST CHINA BODIES.

No. 1.

20 parts China Clay.
60 ,, Bone.
20 ,, Felspar.

No. 2.

30 parts China Clay.
40 ,, Bone.
30 ,, Felspar.

No. 3.

25 parts China Clay.
10 ,, Stone.
45 ,, Bone.
20 ,, Felspar.

No. 4.

30 parts China Clay.
15 ,, Stone.
35 ,, Bone.
20 ,, Felspar.

Earthenware Bodies.

No. 1.

13 parts Ball Clay.
9½ ,, China Clay.
5½ ,, Flint.
4 ,, Stone.

No. 2.

12½ parts Ball Clay.
8 ,, China Clay.
5½ ,, Flint.
2½ ,, Stone.

1 pint of Cobalt Stain to one ton of Glaze.

No. 3.

13¼ parts Ball Clay.
11 ,, China Clay.
4 ,, Flint.
5 ,, Stone.
4 ,, Felspar.

Stain as required.

No. 4.

18½ parts Ball Clay.
13½ ,, China Clay.
8½ ,, Flint.
4 ,, Stone.
2 pints of Blue Stain to ton.

No. 5.

15 parts Ball Clay.
12 ,, China Clay.
6 ,, Flint.
4 ,, Stone.
4 ,, Felspar.
2 pints Blue Stain to ton.

No. 6.

Parian.

11 parts Stone.
10 ,, Felspar.
8 ,, China Clay.

Coloured Bodies.

Ivory Body.

22 parts Ball Clay.
5½ ,, China Clay.
5 ,, Flint.
3½ ,, Stone.

Dark Drab Body.

30 parts Cane Marl.
10 ,, Ball Clay.
7 ,, Stone.
4 ,, Felspar.

Black Body

120 parts Ball Clay.
120 ,, Ochre.
35 ,, Manganese.
2 ,, Carbonate Cobalt.
Grind these first.

Caledonia Body.

32 pounds Yellow Clay.
10 ,, China Clay.
4 ,, Flint.

Brown Body.

50 pounds Red Clay.
7½ ,, Common Clay.
1 ,, Manganese.
1 ,, Flint.

Jasper Body.

10 pounds Cawk Clay.
10 ,, Blue Clay.
5 ,, Bone.
2 ,, Flint.
¼ ,, Cobalt.

Stone Body.

48 pounds Stone.
25 ,, Blue Clay.
24 ,, China Clay.
10 ,, Cobalt.

Egyptian Black.

235 pounds Blue Clay.
225 ,, Ochre Calcined.
45 ,, Manganese.
15 ,, China Clay.

Ironstone Body.

200 parts Stone.
150 ,, Cornwall Clay.
200 ,, Blue Clay.
100 ,, Flint.
1 ,, Calx.

Cream Body.

1½ parts Blue Clay.
1½ ,, Brown Clay.
1 ,, Black Clay.
1 ,, Cornish Clay.
¼ ,, Common Ball Clay.
¼ ,, Buff Colour.

Light Drab.

30 parts Cane Marl.
24 ,, Ball Clay.
7 ,, Felspar.

Sage Body.

15 parts Cane Marl.
15 ,, Ball Clay.
5 ,, China Clay.
Stain with Turquoise stain.

Coloured Glazes.

Blue.

100 parts White Glaze.
3 ,, Oxide Cobalt.
10 ,, Red Lead.
3 ,, Flowing Blue.
3 ,, Enamel Blue.
Grind.

Pink.

100 parts White Glaze.
8 ,, Red Lead.
8 ,, Marone Pink U.G.
3 ,, Enamel Red.
Grind.

Buff.

100 parts White Glaze.
10 ,, Red Lead.
8 ,, Buff Colour.
Grind.

Ivory.

100 parts White Glaze.
8 ,, Red Lead.
8 ,, Amber Enamel.
2 ,, Yellow Underglaze.

Grind.

Turquoise.

100 parts White Glaze.
10 ,, Red Lead.
5 ,, Carbonate of Soda.
4 ,, Enamel Blue.
4 ,, Malachite 110.

Grind.

Yellow No. 1.

100 parts White Glaze.
10 ,, Red Lead.
8 ,, Uranium Oxide.

Grind.

Yellow No. 2.

5 parts Dried Flint.
15 ,, Cornwall Stone.
50 ,, Litharge.
4 ,, Yellow underglaze.

Grind.

Green No. 1.

8 parts Oxide Copper.
3 ,, Flint Glass.
1 ,, Flint.
6 ,, Red Lead.

Grind. Then take

1 part of above.
6 ,, White Glaze.

Or stronger as required.

Green Glaze No. 2.

60 parts Red Lead.
24 ,, Stone.
12 ,, Flint.
12 ,, Flint Glass.
3 ,, China Clay.
14 ,, Calcined Oxide Copper.
¼ ,, Oxide Cobalt.

Grind only.

Green Glaze No. 3.

Best.

80 pounds Stone.
8 ,, Flint.
4 ,, Soda Crystals.
3½ ,, Borax.
2 ,, Nitre.
2 ,, Whiting.
¼ ,, Oxide Cobalt.

Glost fire. Then take

60 parts above Frit.
57 ,, Red Lead.
5¼ ,, Calcined Oxide Copper.
Grind.

Black.

24 parts Red Lead.
4 ,, Raddle.
4 ,, Manganese.
2 ,, Flint.
2 ,, Cobalt Oxide.
2 ,, Carbonate Cobalt.
Glost fire.

White Glazes.

CHINA.

No. 1.

Frit.

6	parts	Stone.
2	,,	Nitre.
12	,,	Borax.
4	,,	Flint.
2	,,	Pearl Ash.

To mill.

24	parts	Frit.
15½	,,	Stone.
6½	,,	Flint.
31	,,	White Lead.

No. 2.

Frit.

24	parts	Stone
53	,,	Borax.
40	,,	Lynn Sand.
32	,,	Felspar.
16	,,	Paris White.

To mill.

90 parts Frit.
30 ,, Stone.
90 ,, White Lead.
4 ,, Flint.
2 ,, Glass.

No. 3.

Frit.

50 parts Stone.
40 ,, Borax.
30 ,, Flint.
30 ,, Flint Glass.
10 ,, Pearl Barytes.

To mill.

160 parts Frit.
30 ,, Red Lead.
½ ,, Enamel Blue.
2 ,, Flint Glass.

No. 4.

Frit.

100 parts Borax.
55 ,, China Clay.
60 ,, Whiting.
75 ,, Felspar.

To mill.

200 parts Frit.
16 ,, China Clay.
3½ ,, White Clay.
3 ,, Stone.
2 ,, Flint.

No. 5.

Frit.

40 parts Stone.
25 ,, Flint.
10 ,, Nitre.
20 ,, Borax.
10 ,, White Lead.
40 ,, Flint Glass

To mill.

145 parts Frit.
56 ,, Stone.
16 ,, Borax.
15 ,, Flint.
60 ,, Red Lead.
8 ,, Flint Glass.

EARTHENWARE

No. 1.

Frit.

108 parts Flint.
45 ,, China Clay.
60 ,, Paris White.
80 ,, Borax.
30 ,, Soda Crystals.

To mill.

270 parts Frit.
20 ,, Flint.
15 ,, Paris White.
80 ,, Stone.
65 ,, White Lead.

No. 2.

Frit.

62 parts Flint.
30 ,, China Clay.
38 ,, Paris White.
48 ,, Boracic Acid.
26 ,, Soda Crystals.

To mill.

230 parts Frit.
160 ,, Stone.
60 ,, Flint.
120 ,, Lead.

No. 3.

Frit.

56 parts Stone.
55 ,, Paris White.
60 ,, Flint.
20 ,, China Clay.
120 ,, Borax.
15 ,, Soda Crystals.

To mill.

212 parts Frit.
130 ,, Stone.
50 ,, Flint.
110 ,, Lead.

Stain as required.

No. 4.

Frit.

100	parts	Stone.	
44	,,	Flint.	
46	,,	Paris White.	
70	,,	Borax.	
10	,,	Nitre.	To mill.
200	,,	Frit.	
60	,,	Stone.	
80	,,	Lead.	

PEARL WHITE GLAZE.

Frit.

50	parts	Flint.	
100	,,	Stone.	
20	,,	Paris White.	
60	,,	Borax.	
20	,,	Soda Crystals.	To mill.
178	lbs.	Frit.	
55	,,	Lead.	
3	oz.	Stain.	

OPAQUE GLAZE.

Frit.

74	parts	Borax.	
94	,,	Stone.	
30	,,	Flint.	
22	,,	China Clay.	
5½	,,	Pearl Ash.	To mill.

175 parts Frit.
46 ,, Lead.
10 ,, Flint.
12 ,, Oxide Tin.
12 ,, Flint Glass.

GLAZE FOR GRANITE.

No. 1.

Frit.

100 parts Stone.
80 ,, Flint.
30 ,, China Clay.
30 ,, Paris White.
40 ,, Felspar.
40 ,, Soda Crystals.
80 ,, Borax. To mill.

360 ,, Frit.
50 ,, Flint.
50 ,, Stone.
80 ,, Lead.

No. 2.

Frit.

100 parts Borax.
50 ,, Stone.
50 ,, Flint.
40 ,, Paris White.
20 ,, China Clay. To mill.

210 ,, Frit.
104 ,, Stone.
64 ,, Flint.
95 ,, Lead.

Raw Glazes.

WHITE.

No. 1.

160 parts White Lead.
32 ,, Borax.
48 ,, Stone.
52 ,, Flint.

Stain with Blue and grind.

No. 2.

80 parts White Lead.
60 ,, Litharge.
40 ,, Boracic Acid.
45 ,, Stone.
50 ,, Flint.

Treat as foregoing.

No. 3.

100 parts White Lead.
4 ,, Borax.
11 ,, Flint.
50 ,, Cornwall Stone.

No. 4.

80 parts Red Lead.
60 ,, Litharge.
40 ,, Tincal.
40 ,, Stone.
52 ,, Flint.

Rockingham Glazes.

No. 1.

50	parts	Litharge.
7½	,,	Stone.
3	,,	Red Marl.
5	,,	Oxide Manganese.
1	,,	Red Oxide Iron.

No. 2.

30	parts	White Lead.
3	,,	Stone.
9	,,	Flint.
3	,,	Red Marl.
5	,,	Manganese.

No. 3.

20	parts	Red Lead.
3	,,	Stone.
2	,,	Flint.
2	,,	China Clay.
3	,,	Manganese.
1	,,	Red Oxide Iron.

Stoneware.

BODIES.

14 parts Ball Clay.
10 ,, China Clay.
8 ,, Stone.

8 parts Ball Clay.
5 ,, China Clay.
3 ,, Flint.
4 ,, Stone.

14 parts Ball Clay.
11 ,, China Clay.
4 ,, Flint.
5 ,, Stone.
4 ,, Felspar.

16 parts Cane Marl.
10 ,, China Clay.
9 ,, Stone.
5 ,, Flint.

GLAZES.

10 parts Stone.
5 ,, Flint.
1½ ,, Whiting.
10 ,, Red Lead.

Hard glaze.

25 parts Felspar.
5 ,, Flint.
15 ,, Red Lead.
1 ,, Plaster.

Hard glaze.

13 parts White Lead.
10 ,, Flint Glass.
18 ,, Felspar.
3 ,, Stone.
1½ ,, Whiting.

Softer.

20 parts Felspar.
14 ,, Flint Glass.
14 ,, White Lead.
3 ,, Stone.
3 ,, Oxide Zinc.
1½ ,, Whiting.
1 ,, Plaster.

Best.

Rockingham.

BODIES.

20 parts Ball Clay.
13 ,, China Clay.
7 ,, Flint.
1 ,, Stone.

22 parts Cane Marl.
15 ,, China Clay.
8 ,, Flint.
1 ,, Felspar.

GLAZES.

60 parts Red Lead.
8 ,, Stone.
3 ,, Red Clay.
5 ,, Best Manganese.

60 parts White Lead.
6 ,, Felspar.
16 ,, Flint.
6 ,, Red Clay.
12 ,, Manganese.

100 parts Red Lead.
15 ,, Stone.
10 ,, Flint.
10 ,, China Clay.
40 ,, Manganese.
2 ,, Crocus Martis.

100 parts Litharge.
14 ,, Felspar.
20 ,, China Clay.
40 ,, Manganese.
2 ,, Oxide Iron.

Jet.

Procure some very first-class Red Marl, add water and, by passing through a fine lawn, make it into a slip, and dip the ware therein.

When fired use the following.

GLAZE.

60	parts	Stone.
30	,,	Flint.
7½	,,	Paris White.
140	,,	Red Lead.

1 part Mazarine Blue Stain to 10 parts Glaze.

Mazarine Blue Stain.

10	parts	Oxide Cobalt.
9	,,	Paris White.
1	,,	Sulphate Barytes.

Calcine.

Another Process.

BODY.

16 parts Ball Clay.
12 ,, China Clay.
9 ,, Flint.
6 ,, Stone.
7 ,, Black Stain.

GLAZE.

70 parts Litharge.
3 ,, Paris White.
12 ,, Flint.
30 ,, Stone.
20 ,, Black Stain.

Black Stain.

12 parts Chromate Iron.
2 ,, Oxide Nickel.
2 ,, Oxide Tin.
5 ,, Carbonate Cobalt.
2 ,, Oxide Manganese.

Calcine and grind.

Blue Stains.

No. 1.

2½ parts Cobalt Oxide.
7½ ,, Oxide of Zinc.
7½ ,, Stone.

Fire this very hard.

No. 2.

6 pounds Zinc.
4 ,, Flint.
4 ,, China Clay.
5 ounces Oxide Cobalt.

Hard fire.

No. 3

3¾ parts Whiting.
3¾ ,, Flint.
2½ ,, Oxide Cobalt.

Glost fire.

Turquoise Stain.

1½ parts Prepared Cobalt.
6 ,, Oxide of Zinc.
6 ,, China Clay.
1 ,, Carbonate Soda.

Fire hard.

Materials.

Tin Ash.

4 parts Old Lead.
2 ,, Grain Tin.

Melt in an iron ladle, and pour out in water, then spread on a dish, and calcine in glost oven with plenty of air.

Oxide of Tin.

5 lbs. Granulated Tin.
½ ,, Nitre.

Put on saucers and fire in glost oven.

Oxide of Chrome

Is made by mixing powdered Bi-chromate of Potash with sulphur as follows:

6 parts Potash.
1 ,, Flour of Sulphur.

Put in saggar, inside kiln, so that fumes are carried away, and place four or five pieces of red-

hot iron on the top so as to ignite it. Leave about 12 hours, then pound very fine, and put in sagger again. Calcine in hard place of biscuit oven. Wash this until the water is quite clear, and dry for use.

Recipes

FOR

Brick and Tile Makers.

Glazed Bricks.

White.

When the Brick or tile leaves the press, with a very soft brush cover the part to be glazed with No. 1 Slip, afterwards dip the face in the same mixture.

No. 1 Slip.

9 parts same Clay as Brick.
1 ,, Flint.
5 ,, Ball Clay.
4 ,, China Clay.

Allow the brick to remain slowly drying for say 8 or 10 hours, then when still moist dip in the

White Body.

24 parts China Clay.
8 ,, Ball Clay.
8 ,, Felspar.
4 ,, Flint.

The brick should now be dried slowly but thoroughly, and when perfectly dry dip the face in clean cold water, and immediately afterwards in Glaze.

Hard Glaze.

18	parts	Felspar.
3½	,,	Cornwall Stone.
1½	,,	Whiting.
1½	,,	Oxide Zinc.
¾	,,	Plaster of Paris.

Soft Glaze.

13	parts	White Lead.
20	,,	Felspar.
3	,,	Oxide Zinc.
1	,,	Plaster of Paris.
13	,,	Flint Glass.
3½	,,	Cornwall Stone.
1¾	,,	Paris White.

Where Clay is used that will stand a very high fire, the White Lead and Glass may be left out.

A wire brush should now be used to remove all superfluous Glaze, &c., from the sides and ends of the brick, which is then ready for the kiln.

In placing, set the bricks face to face, about an inch space being left between the two glazed faces.

All the Mixtures, after being mixed with water to the consistency of cream, must be passed two or three times through a very fine lawn.

The kiln must not be opened till perfectly cold.

Process for Coloured Glazes.

Use 1 part of Colour to 7 parts White Body.
,, 1 ,, ,, 9 ,, Glaze.

Except in the case of Royal and Mazarine Blue, see Special Note, page 107.

Preparation of Colours.

The specified ingredients should all be obtained finely ground, and after being mixed in the proportions given should, in a saggar or some clay vessel, be fired in the brick kiln and afterwards ground for use. In firing the ingredients the highest heat attainable is necessary.

Turquoise.

8 parts Oxide Zinc.
1¼ ,, ,, Cobalt.

Grass Green.

6 parts Oxide Chrome.
1 ,, Flint.
½ ,, Oxide Copper.

Royal Blue.

20 parts Pure Aluminia.
8 ,, Oxide Zinc.
4 ,, ,, Cobalt.

Mazarine Blue.

10 parts Oxide Cobalt.
9 ,, Paris White.
1 ,, Sulphate Barytes.

Red Brown

40 parts Oxide Zinc.
6 ,, Crocus Martis.
6 ,, Oxide Chrome.
5 ,, Red Lead.
5 ,, Boracic Acid.
1 ,, Red Oxide Iron.

Orange.

5 parts pure Aluminia.
2 ,, Oxide Zinc.
1 ,, Bi-chromate Potash.
½ ,, Iron Scales.

Claret Brown.

2 parts Bi-chromate Potash.
2 ,, Flint.
1 ,, Oxide Zinc.
1 ,, Iron Scales.

Blue Green.

6 parts Oxide Chrome.
2 ,, Flint.
¾ ,, Oxide Cobalt.

Celadon.

12 parts Flint.
6 ,, Oxide Chrome.
8 ,, Zinc.
3 ,, Cobalt.

Sky Blue.

9 parts Flint.
13 ,, Oxide Zinc.
2½ ,, Cobalt.
1 ,, Phosphate Soda.

Chrome Green.

3 parts Oxide Chrome.
1 ,, ,, Copper.
1 ,, Carbonate Cobalt.
2 ,, Felspar.

Olive.

3 parts Oxide Chrome.
2 ,, ,, Zinc.
5 ,, Flint.
1 ,, Oxide Cobalt.

Blood Red.

30 parts Oxide Zinc.
7 ,, Crocus Martis.
7 ,, Oxide Chrome.
5 ,, Litharge.
5 ,, Borax.
2 ,, Red Oxide Iron.

Black.

24 parts Chromate Iron.
2 ,, Oxide Nickel.
2 ,, Oxide Tin.
5 ,, Oxide Cobalt.

Imperial Blue.

10 parts Oxide Cobalt.
1½ ,, Black Colour.
7½ ,, Paris White.
2½ ,, Flint.
1 ,, Carbonate Soda.

Mahogany.

30 parts Chromate Iron.
20 ,, Oxide Manganese.
12 ,, Oxide Zinc.
4 ,, Oxide Tin.
2 ,, Crocus Martis.

Gordon Green.

12 parts Oxide Chrome.
8 ,, Paris White.
4½ ,, Bi-chromate Potash.
¾ ,, Oxide Cobalt.

Violet.

2½ parts Oxide Cobalt.
4 ,, Oxide Manganese.
8 ,, Oxide Zinc.
8 ,, Cornwall Stone.

Lavender.

5 parts Calcined Oxide Zinc.
¾ ,, Carbonate Cobalt.
¼ ,, Oxide Nickel.
1 ,, Paris White.

Brown.

4 parts Manganese.
2 ,, Oxide Chrome
4 ,, Oxide Zinc.
2 ,, Sulphate Barytes.

Dove.

7 parts Oxide Nickel.
2 ,, Oxide Cobalt.
1 ,, Oxide Chrome.
18 ,, Oxide Flint.
3 ,, Paris White.

Yellow Green.

6 parts Flint.
4 ,, Paris White.
4½ ,, Bi-chromate Potash.
2 ,, Red Lead.
2 ,, Fluor Spar.
1½ ,, Plaster of Paris.
½ ,, Oxide Copper.

BODIES REQUIRING NO STAIN.

Ivory.

16 parts Cane Marl.
12 ,, Ball Clay.
8 ,, Felspar.
6 ,, China Clay.
4 ,, Flint.

Cream.

22 parts Ball Clay.
5½ ,, China Clay.
5 ,, Flint.
3½ ,, Felspar.
12 ,, Cane Marl.

Black.

120 parts Ball Clay.
120 ,, Ground Ochre.
35 ,, Ground Manganese.

Buff.

12 parts Ball Clay.
10 ,, China Clay.
8 ,, Felspar.
16 ,, Buff Fire Clay.
3 ,, Yellow Ochre.

Drab.

30 parts Cane Marl.
10 ,, Ball Clay.
7 ,, Stone.
4 ,, Felspar.

Brown.

50 parts Red Marl.
7 ,, China Clay.
6 ,, Ground Manganese.
3 ,, Felspar.

Special Note :—

In making the Mazarine Blue Glazed Bricks, use the White Body and stain the Glaze only.

1 part Mazarine Blue, 7 parts Glaze.

For Royal Blue use 1 part Stain to 6 parts White Body, and Glaze unstained.

Blood Red Stain.

Large numbers of brick manufacturers possess beds of clay from which good and sound bricks or tiles can be made, the only drawback being that the clay does not burn a good colour ; in many cases this arises from the fact that the clay contains more or less sulphur or other impurity, which spoils the external appearance of the brick or tile when manufactured. The following Stain it is believed, will be fully competent to convert common clay of any colour into a Rich Deep Red mixed in proportions of

1 part Stain to 60 parts Clay.

Stain.

20	parts	Crocus Martis.
4	,,	Yellow Ochre.
10	,,	Sulphate Iron.
2	,,	Red Oxide Iron.

A still cheaper method is to put a Slip, or external coating, upon the goods. The Slip being quite opaque, effectively hides the natural colour of the brick or tile upon which it may be used.

The process is to mix

1 part of Blood Red Stain.
6 parts of good Red Clay.

Add water until the mixture becomes about the consistency of cream, then with a sponge force the liquid two or three times through a very fine brass wire lawn, No. 80, and dip the goods in the liquid as soon as they are pressed or moulded.

Blue Paviors.

Blue Paving Bricks may be produced with almost any kind of clay that will stand a fair amount of heat, by adopting the same methods as in the former case of Blood Red Bricks, that is, the clay may be stained throughout, or an outside coating may be applied.

Stain for Blue Paviors.

20 parts Ground Ironstone.
5 ,, Chromate Iron.
6 ,, Manganese.
1 ,, Oxide Nickel.

Use 1 part Clay and 1 part Stain for coating, and 50 or 60 parts Clay and 1 part Stain for staining through.

Fire Blue Paviors very hard.

Buff Terra Cotta Slip.

16 parts Buff Fire Clay.
6 ,, China Clay.
3 ,, Yellow Ochre.
10 ,, Ball Clay.
4 ,, Flint.

Add water to the materials after mixing well, pass through the fine lawn, and dip the goods, when soft, in the liquid.

Transparent Glaze.

4	parts	Ground	Flint Glass.
4	,,	,,	White Lead.
¼	,,	,,	Oxide Zinc.

This Glaze is suitable for bricks or tiles made of very good Red Clay, the natural colour of the Clay showing through the Glaze.

The goods must first be fired sufficiently hard to make them durable, afterwards glazed and fired again. The Glaze being a comparatively soft one it will fuse at about half the heat required for the first burning.

The Glaze may be stained if desired with any of the colours given in Glazed Brick Recipes, in the following proportions :

1 part Stain to 1 part Glaze.

Special Recipes

FOR

Pottery, and Brick and Tile Works.

Vitrifiable Bodies.

The following Mixtures will only flux at a very high heat. They require no Glaze when a proper heat is attained, and they are admirably adapted for Stoneware Glazes. New Processes.

No. 1.

20	parts	Cornwall Stone.
12	,,	Felspar.
3	,,	China Clay.
2	,,	Whiting.
1½	,,	Plaster of Paris.

No. 2.

30	parts	Felspar.
9	,,	Flint.
8	,,	Stone.
3	,,	China Clay.

No. 3.

20 parts Felspar.
5 ,, Stone.
3 ,, Oxide Zinc.
2 ,, Whiting.
1 ,, Plaster of Paris.
1 ,, Soda Crystals, dissolved.

Special Glazes

FOR

Bricks or Pottery at One Burning.

To run these Glazes intense heat is required.

No. 1.

40 parts Cornwall Stone.
7 ,, Flint.
4 ,, Paris White.
15 ,, Ball Clay.
6 ,, Oxide Zinc.
15 ,, White Lead.

No. 2.

20 parts Felspar.
5 ,, Cornwall Stone.
3 ,, Oxide Zinc.
3 ,, Flint.
1½ ,, Lynn Sand.
1½ ,, Sulphate Barytes.

No. 3.

25 parts Felspar.
6 ,, Cornwall Stone.
2 ,, Oxide Zinc.
2 ,, China Clay.

No. 4.

118 parts Cornwall Stone.
40 ,, Felspar.
28 ,, Paris White.
4 ,, Flint.

No. 5.

16 parts Felspar.
4 ,, China Clay.
4 ,, Stone.
2 ,, Oxide Zinc.
1 ,, Plaster of Paris.

No. 6.

10 parts Felspar.
5 ,, Stone.
2 ,, Flint.
½ ,, Plaster.

The following Glaze is excellent for Bricks in the biscuit and pottery which require an easy firing.

White.

20 parts White Lead.
9 ,, Stone.
9 ,, Flint.
4 ,, Borax.
2 ,, Oxide Zinc.
3 ,, Felspar.

Enamelled Iron Recipes.

The first thing is to produce a Flux to fuse at a moderate heat, which, by flowing upon the plate, forms a uniform surface for the white or coloured Enamels to work upon.

Flux E. I.

10 parts White Lead.
1 ,, Ball Clay.
10 ,, Flint Glass.
1 ,, Whiting.

These materials should be procured finely ground, and after being thoroughly mixed to be placed in a fire clay crucible and be fired for about five or six hours, sharply, or until the material runs down into a liquid, then with a pair of iron tongs draw the crucible from the kiln and pour the liquid into a bucket of cold water, grind the flux to an extremely fine powder, and spread a coating upon the plate to be enamelled, previously brushing a little gum thereon. The plate must then be fired until a sufficient heat is attained to run or fuse the powder.

The plates may then be coated with any of the following mixtures, which may either be spread on as a powder with a little gum, as in the case of the Flux, or the Colours may be mixed with oil, and the plates dipped therein when coated; the plate requires heating sufficiently to run the enamels bright.

SOFT ENAMELS FOR IRON.

White.

16	parts	Flint Glass.
1½	,,	Tin Oxide.
1½	,,	Nitre.
4	,,	Red Lead.
1	,,	Flint or China Clay.

Black.

1¼	parts	Red Oxide Iron.
1¼	,,	Carbonate Cobalt.
6	,,	Red Lead.
2	,,	Borax.
2	,,	Lynn Sand.

Yellow Coral.

1	part	Chromate of Lead.
2¾	,,	Red Lead.
1	,,	Flint.
¼	,,	Borax.

Canary.

1 part Oxide Uranium.
4½ ,, Red Lead.
1½ ,, Flint.
1 ,, Flint Glass.

Orange.

6 parts Red Lead.
4 ,, Crude Antimony.
3 ,, Tin Ash.
1½ ,, Red Oxide Iron.
Use 1 ,, of above Base.
3 ,, Flux No. 8.

Flux No. 8.

6 parts Red Lead.
4 ,, Borax.
2 ,, Flint.

Turquoise.

40 parts Red Lead.
12 ,, Flint Glass.
16 ,, Borax.
12 ,, Flint.
14 ,, White Enamel.
7 ,, Oxide Copper.
¼ ,, Oxide Cobalt.

Red Brown.

1 part Calcined Sulphate Iron.
3 ,, Flux No. 8.

Mazarine Blue.

10 parts Oxide Cobalt.
9 ,, Paris White.
1 ,, Sulphate Barytes.

Fire the above at an intense heat and for use take

1 part above Stain.
3 ,, Flux No. 8.

Sky Blue.

30 parts Flint Glass.
10 ,, White Lead.
2 ,, Pearl Ash.
2 ,, Common Salt.
4 ,, Oxide Cobalt.
4 ,, White Enamel.

Chrome Green.

10 parts Borax.
4½ ,, Oxide Chrome.
9 ,, White Lead.
9 ,, Flint Glass.
2 ,, Oxide Cobalt.
1 ,, ,, Tin.

Coral Red.

1 part Bi-chromate Potash.
4½ ,, Red Lead.
1½ ,, Sugar of Lead.
1½ ,, Flint.
1 ,, Flint Glass.

White Enamel.

Soft.

80 parts Red Lead.
50 ,, Opal Glass.
50 ,, Flint.
24 ,, Borax.
8 ,, Arsenic.
6 ,, Nitre.

White Enamel.

10 parts Red Lead.
6 ,, Flint.
4 ,, Boracic Acid.
1 ,, Nitre.
1 ,, Soda Crystals.

Where the Enamelled Work is intended to be exposed to the weather, do not use Flux No. 8, but substitute the following :—

1 part White Lead.
1 ,, Ground Flint Glass.

All the Enamels should, after being mixed, be melted in crucibles, poured out when in liquid, and powdered or ground for use.

Liquid Gold.

Take an evaporating dish, put into it 2 ozs. of Pure Gold, then 10 ozs. of Muriatic Acid and 8 ozs. Nitric Acid, place over a flame of gas until the Gold is dissolved, and then add to it 22 grains of Pure Tin, when the Tin is dissolved add 42 grains of Butter of Antimony. Let all remain over the gas until the mixture begins to thicken. Now put into a glass and test with the hydrometer, and it should give about 1800 specific gravity. Pour into a large glass and fill up with water until the hydrometer shows 1090; pour all the solution into a chemical pot and add to it 4 ozs. Balsam of Sulphur, stirring well all the while, and put it over the gas again, in an hour it should give, on testing, 125° Fahrenheit; gradually increase the heat up to 185°, when it should be well stirred, then left to cool about 12 hours. Now pour into a large vessel the watery fluid and wash the dark-looking mass five or six times with hot water; save each lot of water as it contains some portion of Gold. Take away all moisture from the dark mass by rolling on a slab and warming before the fire occasionally so as to keep it soft; when

quite dry take 2¼ its weight of Turpentine and add to it, and put it over a small flame for about 2 hours, then slightly increase the heat for another hour and a-half; allow this to stand about 24 hours, and then take a glazed bowl and spread over the bottom of it 4 ozs. of finely powdered Bismuth, pour over it in several places the prepared Gold; now take a vessel containing water and place inside the other vessel containing the Gold, and heat it so as to cause the water to boil for 3 hours, allow it to remain until settled and pour off the Gold from the settlings of the Bismuth and try it, if not quite right continue the last process with Bismuth until good; the Bismuth causes the Gold to adhere.

Preparation of Balsam of Sulphur—take

16 ounces Oil of Turpentine.
2½ ,, Spirits of Turpentine.
8 ,, Flour of Sulphur.

Place all in a chemical pot and heat until it boils, continue the boiling until no sulphur can be seen in it; now remove from the heat and thin it with Turpentine until about the thickness of treacle, then warm it again, stirring well; allow it to cool until it reaches 45° Fahrenheit, then test it with the hydrometer, and if specific gravity is not 995 continue the addition of turpentine and warming until correct, let it thoroughly cool, then bottle, keeping it air tight.

To Purify Bismuth.

Take 6 ounces Bismuth Metal.
¾ ,, Saltpetre.

Melt together in a biscuit cup, pour out on to a slab, and take away all dirt, then grind into a fine powder.

To Recover the Gold

From the Remains of the foregoing Process.

Put all the "watery" solutions into a large vessel and mix with a filtered saturated solution of Copperas, this will cause a precipitate of pure metallic Gold to gradually subside, wash it with cold water and dry in an evaporating dish.

All rags and settlings that are thick should be burnt in a crucible until a yellow mass is seen, then take this and dissolve it in two parts Muriatic Acid and 1 part Nitric Acid, let it remain in a porcelain dish until it begins to thicken and crystals form on the sides, add a little Nitric Acid, and heat until crystals again form. Now take this and mix with cold water, add a solution of Copperas to it and allow it to settle ; pour off the water, and with fresh water wash till quite free from Acid, the Gold may then be used again, and if great care is exercised almost one-half the original quantity may be recovered.

The quantities given in Recipe should make about 13 to 15 ozs. of the Liquid Gold.

It does not in use require any burnishing, and should be fired at rose colour heat.

If desired it can be fluxed with Venice Turpentine, Oil of Lavender or Almonds.

The Hydrometer, to range from 900 to 2000, may be obtained, as well as all of the materials, from

MESSRS. BURGOYNE, BURBIDGES, & CO.,
Coleman Street,
LONDON.

Notes

FOR

Potters, Glass, and Brick Makers.

In bringing to a close the first part of our Book, which has special reference to the Ceramic and allied Industries, it may not be out of place to give a word of advice upon matters of importance, which may in some measure assist those into whose hands this book may find its way, to make the best use of the various formulæ contained in the preceding pages.

First of all to offer a word of advice to those connected with the China and Earthenware trades. It must be pointed out that the very greatest care should be exercised in selecting the different ingredients of which the Colours, Glazes, etc., are composed.

There is probably no trade or profession engaging the attention of any considerable section of the community, in which a larger proportion of spurious and inferior goods are placed upon the market, than that of a manufacturer of Chemical Colours and the

like compositions. Chemical Brokers and Chemical Merchants, some of first-class repute, and many of first-class disrepute, abound in all our large towns and cities, and hundreds of tons of goods are being sold at any price the vendors can obtain. Readers of this volume are therefore strongly advised that it is of the highest possible importance, that in selecting their commodities, such as Oxides and Minerals for manufacturing the different articles enumerated, to satisfy themselves that they are procuring goods of the best commercial quality, and one step (an important one) will have been taken in the direction of producing Colours and Glazes of the highest standard of excellence. Space will not allow us to mention in detail the different materials most easily adulterated, and therefore, to be as concise as possible, we recommend all persons engaged in any branch of Pottery Manufacture, to deal only with firms of recognised standing and integrity in purchasing the following :—Lead, Manganese, Oxide of Zinc, Borax, Whiting, Oxide of Iron, and Oxide of Cobalt. Another matter of much importance is that the different ingredients comprising any given Colour or Glaze, should be most thoroughly and perfectly mixed *before* being calcined, otherwise the mass will be of a streaky or variegated kind. One other point which requires particular attention, especially in the manufacture of Enamel Colours, is the question of Calcination. Over firing, particularly of Colours or Enamels composed in part of Lead, Borax, Antimony or Litharge, causes a dulness of shade, or film, to appear in using the colours for decorative purposes, whereas clearness and brilliancy are of the first importance.

Another matter of unusual interest to all manufacturers of Ceramics which may appropriately find a place in these Notes, is the vexatious and troublesome question of "crazing." The maker of an artistic Vase, or an elaborately painted tile, having seen the article in which he takes especial pride safely through the two stages of "biscuit" and "glost" firing, may be pardoned for looking sad when in two or three days he finds the splendid glaze of his pet production split and "crazed" like the bottom of a sieve.

The writer of these Notes has for years made experiments, with more or less success, with a view to discover some chemical production to arrest the unsightly defect of "crazing." The following have been the most successful methods, employed in the order given :—

1.—Flux made of 10 parts Tincal, 4 Oxide Zinc, 1 Soda.

2.—A calcination of 5 parts Oxide Zinc, 1 Pearl Ash.

3.—Addition of Raw Oxide Zinc, 6 lb. to each cwt. Glaze.

To Glass Makers it may be necessary to point out, that the Colours suitable for Painting on Glass are those given under the headings "Enamel and Majolica Colours," and that the Underglaze Colours, Pigments, and Colours under the heading "Enamelled Iron Recipes," are suitable for use as Staining Bases.

To Glazed Brick and Tile Makers, whose chief difficulty (judging from the numerous enquiries received) appears to be the production of a Slip to suit the contraction of their Clay, and adhere strongly to either a Clay or a burnt Brick or Tile, we advise the employment of the following method :

Mix together

10	parts	Ball Clay.
10	,,	Cornwall Stone.
7	,,	China Clay.
6½	,,	Flint.

To be mixed and lawned one week before use.

Part II.

Paints.

The Basis, or most important ingredient in making the large majority of Paints is White Lead. The greatest care should be taken to procure from the maker pure White Lead of the very finest quality, and, if not for immediate use, the Lead must be kept in a perfectly dry place, otherwise it will lose its nature, and fail to produce the results desired. The same applies to Red Lead and to Litharge, where these materials are used. To test the quality of dry White Lead, put half-a-pound in an unglazed cup and get a potter or glass maker to calcine it; let the cup be closely covered to keep out the dust. After being fired, the Lead, if pure, will be clear and transparent as glass. If it shows any spots, settlings at the bottom of cup, or dead "scum" on top, it is certain that the sample contains some impurity, probably sulphate of barytes or chalk.

In arranging the following collection of Painters' Recipes, the authors have kept in view the necessity of using names for certain substances which are now somewhat ancient. It is their desire to publish the different formulæ in such a way that any intelligent workman, who spends what to him may be a con-

siderable amount in the purchase of this volume, may be able to derive substantial benefit. For this reason technical terms, known only to the modern student of chemistry, have been made to give place to such names and descriptions as are likely to be understood by every purchaser of the book.

TO MAKE COLOURS OR STAINS FOR PAINTS.

Many minerals, such as Yellow Ochre, Red Ochre, Chrome Yellow, Umber, &c., may be procured in the Raw, unground state at the mines, and to prepare them for use they require grinding to a fine powder, then washing well in boiling water, and afterwards passing through a lawn or sieve, 80 holes to the inch, commonly known as a No. 80's sieve.

Others of the colours can only be produced by the calcination of the different commodities in a furnace.

The following minerals produce effective Stains if thus calcined and afterwards ground to powder.

Sky Blue.

20 parts Oxide Zinc.
6 ,, Whiting.
1 ,, Oxide Cobalt.

Purple.

30 parts Oxide Zinc.
8 ,, Crocus Martis.
6 ,, Oxide Chrome.
5 ,, Litharge.

Dove.

3 parts Oxide Chrome.
1½ ,, Flint.
2 ,, Saltpetre.
2½ ,, Blue Zaffer.
2 ,, Yellow Ochre.
28 ,, Sulphate Barytes.

Orange.

20 parts Litharge.
16 ,, Antimony.
6 ,, Crocus Martis.
4 ,, Tin Ashes.

Pink.

60 parts Oxide Tin.
40 ,, Whiting.
5 ,, Litharge.
1 ,, Sulphate Iron.

Green.

14 parts Flint.
10 ,, Bi-chrome of Potash.
4 ,, Whiting.
2 ,, Borax.

Brown.

3 parts Antimony.
5 ,, Litharge.
2 ,, Oxide Manganese.
1 ,, Iron Scales.

Black.

20 parts Old Glass.
8 ,, Manganese.
1 ,, Oxide Cobalt.
1 ,, Steel Filings.

Chocolate.

8 parts Antimony.
2 ,, Manganese.
5 ,, Litharge.
2 ,, Saltpetre.

To Make Crocus Martis.

Take a glazed dish and spread upon it about half-an-inch thick powdered Steel Filings, sprinkle Aqua Fortis over the top until well damped, then put in the open air to dry. When dry powder again and mix well, and sprinkle more Aqua Fortis over the top, dry again, and repeat the process four or five times until the colour becomes a Deep Purple Red, then powder and keep covered for use.

The following Paints are not to be calcined, but simply mix for use.

White.

18 pounds White Lead.
½ ,, Patent Dryers.
5 pints Raw Linseed Oil.
¾ ,, Turpentine.

Blue.

18 pounds White Lead.
5 pints Raw Linseed Oil.
¾ ,, Turpentine.
1 pound Ultramarine Base.

Orange Brown.

18 pounds White Lead.
5 pints Raw Linseed Oil.
¾ ,, Turpentine.
1 pound Yellow Chrome.
¾ ,, Lamp Black.
¼ ,, Calcined Umber.

Pea Green.

18 pounds White Lead.
5 pints Raw Linseed Oil.
¾ ,, Turpentine.
¾ pound Prussian Blue.
¾ ,, Yellow Chrome.

Slate.

18 pounds White Lead.
5 pints Raw Linseed Oil.
¾ ,, Turpentine.
1¼ pounds Dove Colour.
¼ ,, Sky Blue.

Pale Yellow.

18 pounds White Lead.
5 pints Raw Linseed Oil.
¾ ,, Turpentine.
2 pounds Yellow Chrome.

Ivory.

20 pounds Barytes.
18 ,, Yellow Ochre.
10 ,, Whiting.
8 pints Raw Linseed Oil.
1¼ ,, Turpentine.

Vandyke Brown.

13 pounds Brown Umber.
1¼ ,, Litharge.
11 ,, Barytes.
5½ pints Raw Linseed Oil.
¾ ,, Turpentine.

If larger quantities are required multiply, if less, divide the figures as given.

The calcined colours may all be used for Stains, about two of colour to 25 of the other materials. Take the following as an instance. Use more or less colour as required.

Red.

18 pounds White Lead.
5 pints Raw Linseed Oil.
¾ ,, Turpentine.
2 pounds Calcined Copperas.

Ultramarine Blue Base.

The basis of all Pure Ultramarine Blues is the famous Azure Blue Stone, or mineral, known as Lapis Lazuli, imported from Germany and other countries, but the best is from India and Persia. The

mineral may be had from the foreign merchants trading in London, Paris, Brussels, &c., and the method of preparation is as follows :—

Break the Azure Stone into small pieces like peas, then calcine in a crucible or other pot made of best fire clay. Wash the inside of crucible before using with a coating of Liquid Flint. After the material is well calcined, cast it into a vessel containing distilled vinegar, and then crush and calcine again.

For a Dark Blue add 1 lb. of Carbonate of Cobalt to 40 lbs. of the Lapis Lazuli *before* calcination, and for Blue Green add also 1 lb. of Oxide of Copper and 1 lb. Carbonate Soda.

After being calcined three or four times, powder for use, and keep covered.

This Dark Blue will serve in all cases where Prussian is specified.

To Imitate Venetian Red.

Take 10 pounds Yellow Ochre.
1¼ ,, Sulphate Iron.
¼ ,, Red Oxide of Iron.

Calcine in slow, easy fire for a few hours, until the shade required is obtained. When cold, wash several times in boiling water, pouring off the clear water each time the mixture has settled.

Good, Cheap, White Paint.

Intimately mix together in the dry state

52 per cent. of Ground Silica.
21 ,, ,, Sulphide of Zinc.
7 ,, ,, Oxide of Zinc.

Grind this mixture into a Paint with about 10 per cent. of Linoleate of Manganese (this is also called Linseed Oil Varnish, and is made by heating Borate of Manganese in Linseed Oil until the desired consistency is obtained).

In this Paint the Zinc Sulphate gives the covering power, the Zinc Oxide corrects the greenish tinge of the Sulphate, and the Silica cheapens the cost of production.

Linseed Oil Varnish is the best agglutinant where the latter inert bodies are used in a paint, as they would precipitate more in ordinary boiled oil or oil and driers.

Manganese Linoleate costs 1/- to 2/- per cwt. more than the best Linseed Oil. This paint can be thinned with Turps, Raw or Boiled Oil, or Varnish. It does not require any driers, as the Linoleate is a very rapid drier, and gives a glossy, smooth surface like an oleo-resinous one.

Gold Paint.

Genuine.

Mix equal weights of Gold Leaf or Foil and Honey, and rub up the mixture in an earthenware mortar until the Gold Leaf is reduced to very small fragments, then wash it free of all honey by mixing the compound with three times its weight of water, stirring well, and pouring off the fluid from the precipitated Gold, repeat this washing of the Gold Powder until it is perfectly free of all honey or glutinous mass.

To free the leaf of all grease acquired while being beaten into leaf, it may be boiled with water slightly alkaline. When the Gold Powder is free of all sticky matter, dry it. Keep in glass bottles for use.

To prepare a Paint with this Powder make a menstruum as follows :—Dissolve one part of genuine Gum Arabic in four parts of pure Water free from lime, and mix this mucilage with one part soluble Silicate of Potash (Potash Water-glass), and then grind up a sufficiency of the Gold Powder in this to give the desired consistency of Paint.

Another menstruum is the following. It permits of the Gold Paint being laid on every kind of surface or material, and to be varnished with a Spirit Varnish if necessary :—

Dissolve genuine Gum Arabic in water until a mucilage of the consistency of honey is formed, then to each pint add about ¾ ounce of Borax in a dry powder, and stir the mixture until it becomes a stiff jelly that comes away from the sides of the vessel while being stirred, and then dilute this with warm water to the thickness desired, viz. :—a suitable density that will not allow the Gold Powder to sink readily through it. The Gold Powder and Vehicle may be sold separately or mixed ready for use.

Imitation Gold Paint.

Use a metallic foil made of an alloy of 11 parts of Copper and 2 parts of Zinc ; or an alloy prepared by fusing together Nitrate of Potash, Sal-ammoniac,

and Powdered Chalk, in which 4 parts of Platinum, 2½ parts pure Copper, 1 part pure Zinc, 2 parts Block Tin, and 2½ parts pure Lead are used. This is rolled into foil or beaten into sheets, and then reduced to a powder with Honey, as directed for genuine Gold Paint.

Ship Compositions, Paints, Varnishes, Polishes, Stains, Blackings, etc.

A Good, Cheap, Anti-fouling Composition.

Make an agglutinant by heating together

2	parts by weight of	White Lead ground in oil.
1	,, ,,	Red Lead (dry).
14	,, ,,	Raw Linseed Oil.

While hot stir in Yellow Ochre, Kaolin, baked Clay in powder, or any other inert body (such as Silica, Barytes, Gypsum, &c.), to form a stiff dough, and without allowing this compound to become cold (the vessel should not be removed from the source of heat, as it rapidly sets), dilute with more or less Manganese Linoleate to the required consistency suitable for a paint.

Marine Paint to Resist Sea Water.

First prepare the water-resisting agglutinant by heating together

1 part { dry White Lead, carbonate only, Pb. Co. 3, inhydrate.
1 ,, Litharge.
14 ,, Linseed Oil (fluid measure).

Heat these and stir until of the consistency of thick glue, and for every 36 parts by weight of this compound add 3 parts by weight of Turpentine, and 1 part by weight of Mastic Varnish (Mastic Resin dissolved in Turpentine), re-heat the whole, and for every 32 parts by weight stir in and mix the following:

4 parts Clay that has been baked and powdered.
16 ,, Portland Cement.
1 ,, Zinc White.
1 ,, Red Lead.

After well mixing dilute with more or less Turpentine (not exceeding 25 per cent. of the whole), or Linoleate of Manganese, the latter is preferable, as it has greater binding power.

For Coloured Paints use Red Oxide of Iron or Green Oxide of Chrome, but do not use Chrome Green or Lead, as they will not stand the action of the sea water.

COMPOSITIONS FOR SHIPS' BOTTOMS.

Green.

25 pounds Pale Resin.
8 ,, Prepared Mineral Green.
13 ,, D. L. Zinc.
2 ,, Boiled Oil.
1 gallon Mineral Naphtha.
1½ ,, Petroleum Spirit.

Prepared Mineral Green.

28 pounds Dry Levigated Mineral Green.
7 ,, Turpentine.
7 ,, Turpentine Varnish.
7 ,, Refined Linseed Oil.

Copper Colour.

25 pounds Pale Resin.
15 ,, Light Ital. Ochre.
5 ,, D. L. Zinc.
½ ,, Turkey Red Paint.
1½ ,, Petroleum Spirit.
1 ,, Mineral Naphtha.

Pink.

25 pounds Pale Resin.
16 ,, D. L. Zinc.
7 ,, Deep Vermilion.
1 gallon Mineral Naphtha.
1½ ,, Petroleum Spirit.

Superior Ship Composition.

1. 120 parts Methylated Spirit.
2. 42 ,, Shellac.
3. 8 ,, Resin Varnish.
4. 20 ,, Boiled Linseed Oil.
5. 15 ,, Common Resin.
6. 10 ,, Burgundy Pitch.
7. 6 ,, Tar Spirit.
8. 6 ,, Tallow.
9. 120 ,, Turkey Red.
10. 20 ,, Arsenic.
11. 3 ,, Oxide of Zinc.
12. 3 ,, Oxide of Mercury.

Dissolve Nos. 2 and 3 in No. 1, and melt over a fire Nos. 5, 6, and 8 and allow it to cool a little, then mix Nos. 4 and 7. Then take the solution of Nos. 1, 2, and 3, and add to it Nos. 4, 5, 6, 7, and 8. Stir all together until thoroughly mixed and then add Nos. 9, 10, 11, and 12 (together or separately) until all is well incorporated.

Green Composition for Wooden Ships.

1.	18	pounds	Amber Resin.
2.	7	,,	Venice Turpentine.
3.	3	,,	Rape Oil, or Horse Grease.
4.	8	,,	Prepared Mineral Green.
5.	13	,,	White Zinc Paint.

Dissolve in a pan Nos. 1, 2, and 3, mix Nos. 4 and 5 with 1 gallon Mineral Naphtha. Take ½ gallon Turpentine and put in stand tub, then take mixture of Nos. 1, 2, and 3 and add to it, let it stand two minutes and put in another gallon Mineral Naphtha; then put in the Mineral Green, Zinc, and Naphtha.

The Mineral Green must first be ground with equal parts of Refined Oil, Mineral Turpentine, and Mineral Turpentine Varnish, then 8 pounds of this prepared Mineral Green to be used as before stated.

White Paints.

No. 1.

Cwt.	qrs.	lbs.			
1	0	0	...	...	Zinc White.
0	3	21	...	...	Bleached Barytes.
0	0	7	...	...	Paris White.
0	1	17	...	...	Refined Linseed Oil.

No. 2.

Cwt.	qrs.	lbs.			
1	0	0	...	...	Zinc White.
1	3	14	...	...	Bleached Barytes.
0	0	14	...	...	Paris White.
0	1	17	...	...	Refined Linseed Oil.

No. 3.

Cwt.	qrs.	lbs.			
1	0	0	...	...	Zinc White.
3	3	14	...	...	Barytes.
0	0	14	...	...	Paris White.
0	2	7	...	...	Refined Linseed Oil.

Filling-up Paint.

1 quarter Barytes.
1 ,, Paris White.
½ gallon Gold Size.
½ ,, Boiled Oil.
½ pound Vegetable Black.

Blue Zinc Tint (Lead Colour).

No. 1.

Cwt.	qrs.	lbs.			
0	3	0	...	...	White Zinc Oxide.
2	2	0	...	...	Barytes.
0	0	14	...	...	Paris White.
0	0	7	...	...	Celestial Blue.
0	0	2	...	...	Vegetable Oil.
0	0	3	...	...	Purple Oxide.

Linseed Oil according to thickness desired.

No. 2.

Cwt.	qrs.	lbs.			
0	1	20	...	...	White Zinc Oxide.
3	0	14	...	...	Barytes.
0	2	21	...	...	Paris White.
0	0	3½	...	...	Celestial Blue.
0	0	2	...	...	Vegetable Black.
0	0	3	...	...	Purple Oxide.
0	2	1	...	...	Linseed Oil.

Another Lead Colour Paint.

No. 1.

Cwt.	qrs.	lbs.			
1	2	0	...	...	White Lead.
2	0	0	...	...	Barytes.
			4½	ounces	Vegetable Black.
			2½	gallons	Boiled Oil.
			1½	,,	Varnish Foots.
			6	ounces	Patent Dryers.

No. 2.

Cwt.	qrs.	lbs.			
0	1	21	...	...	White Lead.
3	1	4	...	...	Barytes.
0	1	21	...	...	Paris White.
0	0	0¾	...	...	Lamp Black.
0	0	4	...	...	Celestial Blue.
0	0	1½	...	...	Varnish Foots.
0	1	19	...	...	Boiled Oil.

Stone Colour Paint.

Cwt.	qrs.	lbs.			
0	1	14	...	...	White Lead.
0	0	14	...	...	Yellow Ochre.
3	3	21	...	...	Bleached Barytes.
0	2	7	...	...	Paris White.
0	1	26	...	...	Raw Linseed Oil.

By mixing this with Umber Paint, Drab is produced.

Black Paint.

Cwt.	qrs.	lbs			
1	2	0	...	...	Unbleached Barytes.
0	3	0	...	...	Paris White.
0	0	26	...	...	Vegetable Black.
0	0	3	...	...	Dryers.
0	0	4½	...	...	Oak Varnish.
0	0	9	...	...	Oak Varnish Foots.
0	0	3	...	...	Litharge.
0	0	2½	...	...	Dry Brunswick Blue.
0	2	2	...	...	Boiled Linseed Oil.

Another.

Cwt.	qrs.	lbs.			
2	1	0	...	...	Barytes.
0	3	0	...	...	Paris White.
0	0	7	...	...	Vegetable Black.
0	0	3	...	...	Dryers.
0	0	13½	...	...	Varnish Foots.

3 gallons Boiled Oil.

Light Drab Paint

Cwt.	qrs.	lbs.			
3	0	0	...	...	Barytes.
0	1	0	...	...	White Lead.
0	0	16	...	...	English Umber.
0	1	11	...	...	Boiled Oil.

Yellow Paint.

No. 1.

Cwt.	qrs.	lbs.			
1	2	0	...	...	Yellow Ochre.
1	0	0	...	...	Barytes.
0	2	0	...	...	Paris White.
0	2	24	½ and ½ Oil (Raw and Boiled).		

No. 2.

Cwt.	qrs.	lbs.			
0	1	14	...	...	Yellow Ochre.
1	2	0	...	...	Barytes.
0	2	0	...	...	Paris White.
0	1	9	½ and ½ Oil (Raw and Boiled).		

English Umber Paint.

No. 1.

Cwt.	qrs.	lbs.			
1	0	0	...	...	English Umber.
0	2	0	...	...	Paris White.
1	2	0	...	...	Unbleached Barytes.
0	1	12	½ and ½ Oil (Raw and Boiled).		

No. 2.

Cwt.	qrs.	lbs.			
0	2	0	...	...	English Umber.
0	3	0	...	...	Paris White.
1	2	0	...	...	Unbleached Barytes.
0	1	12	...	½ and ½	Oil (Raw and Boiled).

Raw Turkey Umber Paint.

Cwt.	qrs.	lbs.			
0	1	14	...	...	Raw Turkey Umber.
1	1	0	...	...	Barytes.
0	1	0	...	...	Whiting.
0	2	0	½ and ½		Oil (Raw and Boiled).

Burnt Turkey Umber Paint.

Cwt.	qrs.	lbs.			
0	3	0	...	...	Burnt Turkey Umber.
0	2	14	...	...	Barytes.
0	2	18	½ and ½		Oil (Raw and Boiled).

Emerald Green Paint.

Cwt	qrs.	lbs.			
3	0	0	...	...	Barytes.
0	1	14	...	...	Paris White.
0	2	11	...	...	Primrose Chrome.
0	1	10	...	...	Celestial Blue.
0	2	3	...	...	Linseed Oil.

Brunswick Green Paint.

No. 1.

Cwt.	qrs.	lbs.			
1	0	0	...	...	White Barytes.
0	1	0	...	...	Paris White.
2	0	0	...	...	Brunswick Green.
0	1	10	...	...	Raw Linseed Oil.

No. 2.

Cwt.	qrs.	lbs.			
1	3	4	...	...	White Barytes.
0	1	0	...	...	Paris White.
1	0	0	...	...	Brunswick Green.
0	1	10	...	...	Raw Linseed Oil.

Other Green Paints.

No. 1.

Cwt.	qrs.	lbs.			
0	3	14	...	...	Barytes.
0	1	14	...	...	Paris White.
2	0	0	...	...	Green (shade desired).
0	1	10	...	...	Raw Oil.

No. 2.

Cwt.	qrs.	lbs.			
1	2	0	...	...	Barytes.
0	1	0	...	...	Paris White.
1	0	0	...	...	Green.
0	1	10	...	...	Raw Oil.

Saxon Green Paint.

No. 1.

Cwt.	qrs.	lbs.			
1	0	0	...	...	Barytes.
0	1	0	...	...	Paris White.
2	0	0	...	...	Saxon Green.
0	1	10	...	...	Raw Oil.

No. 2.

Cwt.	qrs.	lbs.			
1	3	14	...	...	Barytes.
0	1	0	...	...	Paris White.
1	0	0	...	...	Saxon Green.
0	1	10	...	...	Raw Oil.

Bronze Green Paint.

Cwt.	qrs.	lbs.			
2	0	0	...	...	Barytes.
0	2	0	...	...	Mid. Chrome (dry).
1	0	0	...	...	Mid. Green (dry).
0	0	12	...	...	Vegetable Black.
0	2	0	...	...	Raw Linseed Oil.

Celestial Blue Paint.

No. 1.

Cwt.	qrs.	lbs.			
2	1	0	...	...	Celestial Blue.
0	3	9	...	...	Paris White.
0	1	22	...	...	Raw Oil.

No. 2.

Cwt.	qrs.	lbs.			
1	0	0	...	...	Celestial Blue.
1	3	14	...	...	No 1 Barytes.
0	1	0	...	...	Paris White.
0	1	10	...	...	Linseed Oil.

Crystal Palace Blue Paint.

Cwt.	qrs.	lbs.			
3	0	0	...	...	White Barytes.
0	2	0	...	...	White Lead.
0	0	7	...	...	Ultramarine Blue.
0	1	8	...	...	Refined Oil.

Venetian Red Paint.

Cwt.	qrs.	lbs.		
0	2	21	...	Calcined and Washed Copperas.
0	0	7	...	Oxide Iron.
1	2	0	...	Unbleached Barytes.
0	2	0	...	Paris White.
0	1	17	...	Boiled Oil.

Turkey Red Paint.

Cwt.	qrs.	lbs.			
1	0	0	...	...	Red Colour, 1093, E. J. & Co.
2	1	0	...	...	White Barytes.
0	2	0	...	...	Paris White.
0	1	18	...	...	Boiled Oil.

Indian Red Paint.

Cwt.	qrs.	lbs.			
0	3	0	...	...	Red Colour, 1120, E. J. & Co.
1	1	0	...	...	Barytes.
0	1	0	...	...	Paris White.
0	1	4	...	...	Boiled Oil.

Oxide of Iron Paint.

Cwt.	qrs.	lbs.			
0	3	0	...	...	Oxide of Iron, Red, Purple, or Black, as desired.
1	2	0	...	...	Unbleached Barytes.
0	1	0	...	...	Paris White.
0	1	4	...	...	Boiled Oil.

Yellow Dressing.

Cwt.	qrs.	lbs.			
0	2	0	...	...	Yellow Ochre.
1	0	0	...	...	Paris White.
1	0	0	...	...	White Barytes.
0	3	0	...	...	Dryers.
			½ gallon		Terebine.
			½ ,,		Oak Varnish.
0	0	2	...	...	Sugar of Lead (White).
0	0	2	...	...	Litharge (Powdered).

Boiled Linseed Oil as required.

Superior Black Dressing.

Cwt.	qrs.	lbs.			
1	1	0	...	...	Paris White.
0	2	0	...	...	Barytes.
0	1	0	...	...	Vegetable Black.
0	0	3	...	...	White Sugar of Lead.
0	0	3	...	...	Litharge.
			½ gallon		Terebine.
			1 ,,		Varnish Foots.
			½ ,,		Oak Varnish.
0	0	3	...	...	Dryers.
0	0	3	...	...	Celestial Blue.
0	2	3	...	...	Boiled Oil.

Marking Black Paint.

Cwt.	qrs.	lbs.			
1	3	0		...	Unbleached Barytes.
1	1	0	...	...	Paris White.
0	0	14	...	...	Vegetable Black.
			1 gallon		Varnish Foots.
			2 ,,		Terebine.
0	0	7	...	...	Dryers.
			3 gallons		Boiled Oil.

Chocolate Paint.

Cwt.	qrs.	lbs.			
1	0	0	...	...	Purple Oxide of Iron.
0	2	0	...	...	Barytes.
0	2	0	...	...	Paris White.
0	0	2	...	...	Vegetable Black.

Boiled Oil according to thickness desired.

VARNISH PAINTS.

Blue.

No. 1.

25	pounds	Pale Resin.
18	,,	Prepared Blue Paint.
3	,,	Zinc Oxide.
2	,,	Pale Boiled Oil.
1	gallon	Mineral Naphtha.
1½	,,	Turps.

Prepared Blue Paint.

3	pounds	Best Ultramarine.
19	,,	Zinc Oxide.

Ground in Oil.

Blue.

No. 2.

50	pounds	Middle Resin.
21	,,	Zinc Oxide.
5	,,	Steel Blue Scales.
4½	gallons	Mineral Naphtha.
3	,,	Turps.
1	,,	Boiled Oil.

Chocolate.

50	pounds	Middle Resin.
35	,,	Deep Indian Red.
7	,,	Oxide of Zinc.
3½	gallons	Mineral Naphtha.
3½	,,	Petroleum Spirit.
1	,,	Boiled Oil.

Red.

25 pounds Amber Resin.
9 ,, Super Turkey Red.
11 ,, Zinc Oxide.
1 gallon Mineral Naphtha.
2 pounds Boiled Oil.
1½ gallons Turps.

Dark Drab.

25 pounds Pale Resin.
20 ,, Zinc Oxide.
1½ ,, Mid. Yellow Paint.
1 gallon Mineral Naphtha.
2 pounds Pale Boiled Oil.
1½ gallons Turps.

Light Drab.

25 pounds Pale Amber Resin.
20 ,, Zinc Oxide.
2 ounces Light Yellow Paint.
¼ ,, Best Black Paint.
1 gallon Mineral Naphtha.
2 pounds Pale Boiled Oil.
1½ gallons Turps.

Patent Knotting.

No. 1.

58 pounds Best Button Lac.
11½ gallons Methylated Spirit.
¾ pint H_2O.

Patent Knotting.—CONTINUED

This is pure Knotting, and is to be used with "E" Varnish in proportion of

2 parts "E" Varnish.
6 ,, Pure Knotting.

"E" Varnish.

75 pounds Kowrie Dust.
10 ,, Methylated Spirit.
2½ ,, Turpentine.

Patent Knotting.
No. 2.

84 pounds Button Lac.
36 ,, Amber Resin.
24 gallons Methylated Spirit.

Dryers.

Cwt.	qrs.	lbs.			
0	0	21	...	...	White Sugar of Lead.
0	2	21	...	...	Powdered Litharge.
0	3	21	...	...	White Copperas.
4	1	0	...	...	Paris White.
4	1	0	...	...	Barytes.
2	0	10	...	...	Raw Linseed Oil.

The first three articles powdered very fine are put in a tub with 4 gallons of Oil, and let it stand a day or two and then turned over with an iron spatula, and another gallon of Oil added. When this has stood two or three days longer, stir up and add another gallon of Oil. It is 10 to 14 days getting ready, then grind it with the Whiting, etc., and remainder of Oil.

Terebine.

Cwt.	qrs.	lbs.			
			24 gallons Raw Oil.		
0	1	10	...	...	Flake Litharge.

Boil 12 hours, and when cool enough mix with 34 gallons of Turps.

Patent Dryers.

Special.

No. 1.

Cwt.	qrs.	lbs.			
2	0	0	...	...	Barytes.
2	0	0	...	...	Whiting.
0	1	0	...	...	White Sugar of Lead.
0	2	0	...	...	White Copperas.
0	2	0	...	...	Powdered Litharge.
0	2	0	...	...	Dry White Lead.
1	0	0	...	...	Boiled Linseed Oil.

No. 2.

Cwt.	qrs.	lbs.			
2	0	0	...	...	Barytes.
1	2	0	...	...	Whiting.
0	1	14	...	...	White Sugar of Lead.
0	0	21	...	...	White Copperas.
0	1	0	...	...	Powdered Litharge.
0	1	0	...	...	Dry White Lead.
0	3	0	...	...	Boiled Linseed Oil.

No. 3.

Cwt.	qrs.	lbs.			
2	2	0	...	...	Barytes.
2	2	0	...	...	Whiting.
0	1	14	...	...	White Sugar of Lead.

Patent Dryers, No. 3—Continued.

Cwt.	qrs.	lbs.			
0	1	0	...	...	White Copperas.
0	1	14	...	...	Powdered Litharge.
0	1	4	...	...	Dry White Lead.
1	0	0	...	...	Boiled Linseed Oil.

VARNISHES.

Mineral Turps Varnish.

18 pounds Pale Resin.
7 ,, Venice Turps.
2 ,, Boiled Oil.
1 gallon Mineral Naphtha.
1½ ,, Turps.

Eggshell Flatting Varnish.

1 gallon Hard Body.
1 ,, Flatting Varnish.
1 ,, Turps.
3 pounds Bi-carbonate Manganese.

White Hard Varnish.

72 pounds Best Sandarach.
17 gallons Methylated Spirit.
5 ,, Turps Varnish.

Dark Oak Varnish.

Cwt.	qrs.	lbs.			
1	2	24	...	...	Kowrie Gum.
0	0	15	...	...	Flake Litharge.
0	0	15	...	...	Sulphate of Zinc.

42 gallons Raw Linseed Oil.
36 ,, Turps.

Harness Varnish.

1 pound Gum Benzoin.
2 ounces Shellac.
4 ,, Drop Black.
1 ,, Indigo Blue.
½ ,, Venice Turps.
½ pint Methylated Spirit.

Pale Oak Varnish.

Cwt.	qrs.	lbs.		
1	1	4	...	... Kowrie Gum.
0	1	20	...	... Copal.
0	0	15	...	... Litharge.

40 gallons Raw Linseed Oil.
36 ,, Turps.

Cabinet Varnish.

Cwt.	qrs.	lbs.		
0	1	0	...	... Gum Anime.

11½ gallons Raw Linseed Oil.
11½ ,, Turps.

Crystal Paper Varnish.

Cwt.	qrs.	lbs.		
0	1	0	...	... Gum Damar.

5 gallons Turps.

Carriage Varnish.

Cwt.	qrs.	lbs.		
0	2	4	...	... Best Kowrie.
0	2	4	...	... Best Anime.
0	2	4	...	... Best Copal.
0	0	15	...	... Litharge.

42 gallons Linseed Oil.
40 ,, Turpentine.

Turpentine Varnish.

Cwt.	qrs.	lbs.			
1	1	14	...	...	Dark Resin.

18 gallons Turpentine.

Furniture Varnish.

12 pounds Kowrie.
9 pints Linseed Oil.
7 gallons Turpentine.

Gold Size.

Cwt.	qrs.	lbs.			
1	0	0	...	...	Kowrie.
0	1	2	...	...	Litharge.
0	0	6	...	...	Sulphate of Zinc.
0	0	14	...	...	Raw Turkey Umber.

20 gallons Refined Oil.
6 ,, Turpentine.

POLISHES.

White French Polish.

3 pounds White Lac.
1 gallon Methylated Spirit.

French Polish.

58 pounds Best Button Lac.
32 ,, Best Orange Shellac.
7 ,, Benzoin.
4 ,, Oxalic Acid.
2 ,, Gamboge.
1½ gallons H_2O, S.W.
40 ,, Methylated Spirit.

Garnet Polish.

45 pounds Garnet Lac.
23 gallons Methylated Spirit.
5 pints H_2O, S.W.

Brunswick Black.

Cwt.	qrs.	lbs.			
0	2	0	...	...	Asphaltum.
0	0	8	...	...	Red Lead.
			1½ gallons		Linseed Oil.
			13	,,	Turps.

Patent Knotting.

A good one is made by using 3 pounds Best Orange Shellac to 1 gallon Methylated Spirit.

Artistic Black Enamel.

8	ounces	Asphaltum (Egyptian).
4	,,	Dark Resin.
¾	,,	Powdered Sugar of Lead.
½	,,	Powdered Drop Black.
½	,,	Oil of Cassia.
4	,,	Boiled Linseed Oil.

Enough Turpentine to make 2 pints.

To the first four ingredients, finely powdered, add the Boiled Oil, place in an iron saucepan or evaporating dish, apply heat until liquefied, withdraw heat and add Turpentine, &c., stirring until well mixed. Keep the bottles well corked.

WATER STAINS.

Ebony.

1½ pounds Orange Lac.
¾ ,, Spirit of Hartshorn.
28 ,, Water.
½ ,, Aniline Black.

This Stain can be used for a Boot or Kid Reviver by using only 16 lbs. of Water.

Walnut.

1 Cwt. Vandyke Brown (ground fine in water).
28 pounds Soda.

Dissolve in hot water and mix together in a mixer. Dry on sheet-iron trays.

Oak.

70 pounds Vandyke Brown.
42 ,, Yellow Ball.
28 ,, Soda.

Same process as Walnut.

SPIRIT STAINS.

Rosewood.

3 pounds Button Lac.
4 ounces Vandyke Brown.
1 gallon Methylated Spirit.

Mahogany.

3 pounds Button Lac.
1¼ ounces Bismarck Brown.
1 gallon Methylated Spirit.

Maple.

3 pounds Pale Button Lac.
⅛ ounce Bismarck Brown.
½ ,, Vandyke Brown.
4 ,, Gamboge.
1 gallon Methylated Spirit.

Satinwood.

3 pounds Light Button Lac.
¼ ounce Dragon's Blood.
3 ,, Gamboge.
1 gallon Methylated Spirit.

Oak.

3 pounds Button Lac.
1 ounce Vegetable Black.
1 ,, Vandyke Brown.
½ ,, Bismarck Brown.
1 gallon Methylated Spirit.

Walnut.

3 pounds Button Lac.
½ ounce Vegetable Black.
½ ,, Vandyke Brown.
½ ,, Bismarck Brown.
1 gallon Methylated Spirit.

Old Oil Gold Size.

This is made by grinding Yellow Ochre in Fat Boiled Linseed Oil, and slightly thinning with Turpentine when using it.

The Oil should be exposed to the air in a shallow vessel for months to fatten.

Boot Top Liquid.

3 drachms Solution of Muriate of Tin.
1 ounce French Chalk (in powder).
½ ,, Salt of Sorrell.
1 ,, Flake White.
½ ,, Burnt Alum.
1 ,, Cuttle Fish Bones (powdered).
1 ,, White Arsenic.
1 quart Boiling Water.

Cement for fixing Metal Letters to Plate Glass.

15 parts Copal Varnish.
5 ,, Drying Oil.
3 ,, Turps (spirits).
2 ,, Oil of Turpentine.
5 ,, Liquefied Glue.

Melt all together in a water bath until well mixed, and then add 10 parts Slaked Lime.

Marine Glue.

Cut Caoutchouc into small pieces and dissolve in Coal Naphtha by heat and agitation. Add to this solution Powdered Shellac, and heat the whole, constantly stirring until combination takes place, then pour it on metal plates to form sheets.

When used it must be heated to 248° Fahr., and applied with a brush.

Furniture Paste.

2½	pounds	Beeswax.
3	,,	Turps.
1	,,	Yellow Soap.
4	,,	Water.

Dissolve the Wax in Turps and the Soap in hot water, then mix them well together and stir diligently. When cold it is ready for use.

Caustic Paste.

7	pounds	Slaked Lime.
2	,,	Carbonate of Potash.
2	,,	Black Potash.
½	,,	Soft Soap.
1	,,	Liquid Ammonia.

The Balkan Paste.

4	ounces	Pale Glue.
2	,,	White Loaf Sugar.
1	,,	Powdered Starch.
¼	pound	White Dextrine.
3	ounces	Pure Glycerine.
¼	,,	Carbolic Acid.
32	,,	Boiling Water.

Cut up the Glue and steep it in ½ pint Boiling Water, when softened melt in a saucepan; add Sugar, Starch, and Dextrine, and lastly the Glycerine, in which Carbolic Acid has been mixed; add remainder of water, and boil until it thickens.

Pour into jars or bottles.

Paste Blacking.

20 pounds Treacle.
30 ,, Ivory Black.
5 ,, Sulphuric Acid.
1 pint Sweet Oil.
1 ,, Linseed Oil.

Add as much Vinegar as it will take up.

Blacking.

No. 1.

1¼ pounds Ivory Black.
1 ,, Treacle.
2 ounces Sweet Oil.
½ pint Vinegar.
3 ounces Sulphuric Acid.

No. 2.

3½ pounds Ivory Black.
1 ,, Treacle.
1¼ ,, Sulphuric Acid.
1 ounce Blue Vitriol.
1 quart Porter.
½ pint Sweet Oil.
½ ,, India Rubber Varnish.

Mix Black, Treacle, and Porter together, then add the Vitriol and Oil, and after mixing it well, add the Acid by degrees ; stir 10 minutes, and then add the India Rubber Varnish.

Harness Blacking.

1 pound Isinglass.
1 ,, Powdered Indigo.
4 ,, Logwood.
5 ,, Glue.

Boil together in 8 pints of Vinegar until the Glue is dissolved, then strain through a cloth and bottle.

Laundry Blues.

No. 1.

Cwt.	qrs.	lbs.			
0	1	15	...	...	Indigo.
3	0	0	...	...	Terra Alba.
3	0	0	...	...	Barytes.
0	0	5	...	...	Vegetable Black.

Grind together under edge runners.

No. 2.

Equal parts of Ultramarine and Carbonate of Soda ground under edge runners with water into a stiff paste, and then dried into any shape required.

Sheep Dip.

Cwt.	qrs.	lbs.			
0	2	14	...	...	Soda Ash.
0	3	14	...	...	Arsenic.
2	0	0	...	...	Soft Soap.
0	2	4	...	...	Sulphuric Sublimate.

Metal Polishes, Blackings, &c.

Metal Polish No. 1.

8 ounces Powdered Oxalic Acid.
12½ pounds Levigated Red Oxide of Iron (Crocus Martis).
10 ,, Rottenstone.
30 ,, Palm Oil.
4 ,, Vaseline or Castile Soap.

Method of Preparation.

Mix the first three ingredients together in a powder by sifting them several times through a hair sieve. Mix together, separately from the other ingredients, the Palm Oil and Vaseline, and after well mixing by stirring the melted mass, stir in the mixed Powder, incorporate well, and then put into metallic boxes.

If Castile Soap be used instead of Vaseline, cut it up into shreds (or else use the Powdered Soap), dissolve the Oxalic Acid in water, using as little water as possible, and add this solution to the Soap, which must be contained in a vessel that can be

heated over a fire, and when the Soap has become soft and homogeneous stir in the Palm Oil and mix, and then mix in the compound powders.

To use either of these preparations : wet a rag with water, rub it over the Paste, and then rub the metal with a rag and afterwards polish by rubbing with a dry linen cloth. This Polishing Paste does not become mouldy, but in summer the preparation in which Vaseline is used softens slightly, in which case it is well to incorporate ½ per cent. of Caustic Soda with the compound before putting it into boxes.

Metal Polish No. 2.

4 pounds Rottenstone in fine powder.
2 ,, Bath Brick ,, ,,
12 ounces Oxalic Acid.
1 pound Emery Flour.
1 ,, Sesquioxide of Iron.
1½ pounds or more Sweet Oil.
½ ounce Oil of Cassia.

Powder Oxalic Acid and mix with other Powders intimately, then having mixed Oil of Cassia with Sweet Oil, add it until a stiff paste is formed, and if 1½ lbs. of Oil is not sufficient, add more, say 4 to 6 ounces.

To be rubbed on with a rag and polished with a dry duster.

Paste Blacking.

Superior.

4 parts by weight Ivory Black.
1 ,, fluid measure Sulphuric Acid.
1 ,, fluid measure { Sperm or any Fish Oil or Colza Oil.
3 ,, fluid measure { Saturated Solution of Crystallized Carbonate of Soda.
2 ,, by weight Sugar or Treacle.
2 ,, fluid measure { Liquefied Solution of Glue and Glycerine.

Preparation.

First prepare the Glue and Glycerine Solution as follows :—soak one part Good White Glue or Gelatine in four parts of water for 12 hours, and then melt it by gently heating, and to every 40 parts of the Glue add 1½ parts (both fluid measure) of Glycerine, and set this preparation aside for use as required.

Next, compound the other ingredients thus: moisten the Ivory Black slightly with a little water in an earthenware pan, and then stir in the Acid and mix it well with the Black Powder by stirring with a wooden rod; the Acid will make the Ivory Black of a thick dough or paste (due to the action of the Acid on the Phosphate of Lime in the Black). Add the Sperm Oil and well incorporate this, and add just enough of the saturated Solution of Washing Soda to cause the mass to effervesce, but not enough to liquefy it (add this Antacid a little at a time) and stir the compound until the Acid is neutralised or the

ebullition ceases, then put in the Treacle or Sugar (treacle makes a soft, damp paste, sugar a drier one) and gradually stir in the Glue and Glycerine solution, adding more or less of this compound according to the desired stickiness of the paste.

The Glue and Glycerine Solution gives depth and brilliancy to the Blacking and renders it damp-proof, but at the same time keeps it soft and prevents it drying to a hard, powdery mass, while the Antacid (soda carbonate) neutralises the acidity of the Sulphuric Acid, and so prevents it becoming injurious to the leather.

Harness Blacking.

1	pound	Beeswax.
1½	,,	Turpentine.
1	ounce	Powdered Indigo.
4	,,	Powdered Drop Black.
2	,,	Paste Prussian Blue.
½	,,	Oil of Thyme.

Melt Beeswax and add to it 1 lb. of Turpentine. Put powdered Indigo, Drop Black, and Prussian Blue into an old mortar and rub with remaining 8 ozs. Turpentine into a smooth paste, which now add to the melted wax, &c. Now add Oil of Thyme, stirring until it thickens, and then pour into tins.

A little to be applied with a stiff brush, and polished with a soft brush or duster.

Brilliantine.

Patent Blacking.

4 ounces Gum Shellac.
1 ,, Gum Sandarac.
4½ drachms Aniline Spirit Black.
1½ ,, Aniline Spirit Dark Blue.
¾ ounce Glycerine.
1 ,, Castor Oil.
1½ drachms Oil of Cassia.
1½ pints Methylated Spirit.

Bruise Gums and shake for an hour with Methylated Spirit in a quart tin, and when dissolved strain through a fine strainer or muslin. Rub Aniline Colours with Glycerine in an old mortar and transfer to tin, washing out mortar with remains of Methylated Spirit. Now add Oil of Cassia and Castor Oil, shaking well.

To be used with a sponge like Nubian dressing.

Liquid Blackings and Blues.

The following Recipes for Liquid Blackings are given among the published formulæ of eminent experts.

No. 1.

1 pint Blue Black Ink.
½ pound Gum.
2 ounces Treacle.
2 ,, Vinegar.
2 ,, Spirit of Wine.

Mix the Ink and Vinegar, stirring well, put in the Gum and Treacle, and when dissolved pass through a fine strainer, afterwards add Spirit of Wine.

No. 2.

2 pounds Bone Black.
2 ,, Treacle.
½ ,, Sweet Oil.

Mix the three foregoing well together, then add ¾ lb. Oil of Vitriol and Vinegar to make up one gallon.

No. 3.

4½ pounds Raw Linseed Oil.
¼ ,, Bone Black.
1 ,, Treacle.
10 drachms Oil of Vitriol.
5 ,, Copperas.

Laundry Blue.

Powder.

10 parts Potato Starch.
10 ,, Farina, or Wheat Flour refuse.
20 ,, Paris Blue.

Paris Blue is a compound composed of Sulphur, Carbonate of Soda, and a Silicate, or else one compounded of Kaolin, Sulphate of Soda, Soda Carbonate, Sulphur and Charcoal, it is in fact a cheap Ultramarine method of preparation.

All the ingredients are finely powdered, and then well mixed by sifting several times, and forming into a dough or paste, by adding just enough water to enable the mass to be kneaded like baker's dough. Spread this dough in an uniform thickness on boards and allow it to dry by artificial heat, hot air, or exposure to the atmosphere, and when about half dry cut it into strips and then again transversely into squares ; then put these squares into the "tumbler," a revolving barrel or drum, with some dry Paris Blue, and set it in motion until the squares are polished and of good appearance. "Thumb" Blues are polished by being rubbed up in Indigo powdered very finely.

Liquid Laundry Blue.

This may be prepared either with liquid Prussian Blue or Indigo Carmine thus: make a solution of Gum Dragon (Gum Tragacanth) by dissolving one to two ounces of the Powdered Gum in one gallon of cold water in which ½ ounce Oxalic Acid has been dissolved. The Gum will take several days to dissolve, and will require frequent stirring up, and straining before use, and to the strained portion add as much Prussian Blue in fine powder as the liquid will dissolve without precipitating, and the compound is ready for use.

Instead of Powdered Prussian Blue, soluble Prussian Blue may be used. This is made by dissolving solid Prussian Blue in a solution of Oxalic Acid, but as the use of Oxalic Acid is to be deprecated for the use of laundresses, as it would set up blood poisoning should it get into any cuts in the flesh, it is best to prepare Liquid Blue by making a solution of Yellow Prussiate of Potash (Ferrocyanide of Potassium) with water, and then by adding a sufficient quantity of Chloride of Iron to produce a blue, but not enough to be precipitated.

For an Indigo Liquid Blue.

Dissolve 1 lb. of Indigo Carmine in 1 gallon of water, and then dissolve therein 8 ounces of genuine Gum Arabic, stir well, and when the gum has dissolved the Liquid Blue is fit for use. Both these liquids are used by adding a little to the blueing water by the washerwoman.

Indigo Carmine is prepared by dissolving finely powdered Indigo in fuming Sulphuric Acid and diluting with water, and neutralising the Acid by stirring in Chalk until all effervescence ceases, then allow it to rest, and finally filter off the precipitate; this is the Carmine desired. It is soluble in water whilst Raw Indigo is not.

The proportions to be used are

1 part Indigo.
4 ,, Sulphuric Acid.

Allow it to stand 6 to 12 hours and dilute with twice its bulk of water. The dissolved Indigo will be a dirty grey frothy mass, but with the addition of the water it is re-precipitated in the form of a deep blue powder.

Dry Bases for Paints.

The following Colours and Minerals mixed in the proportions given and then ground to fine powder make excellent Dry Paints, and may be thinned with Turpentine, Oil, and a small percentage of cheap Varnish to consistency required.

Buft.

44	pounds	Yellow Ochre.
6	,,	Whiting.
5	,,	Oxide of Zinc.
1½	,,	Plaster of Paris.

Brick Brown.

26	pounds	Yellow Ochre.
4	,,	Calcined Copperas.
1¼	,,	Red Hematite.
7	,,	Best Silica.
18	,,	Whiting.

Grey.

30 pounds Oxide of Zinc.
6 ,, White Lead.
12 ,, Whiting.
¼ ,, Bone Black.
2 ,, Yellow Ochre.

Crimson.

25 pounds Indian Red.
7 ,, Crocus Martis.
6 ,, Oxide of Zinc.
6 ,, Whiting.

Vandyke Brown.

25 pounds Yellow Ochre.
18 ,, Whiting.
4 ,, Umber.
7 ,, Oxide of Zinc.
1 ,, Purple Oxide of Iron.

Blood Red.

30 pounds Crocus Martis.
20 ,, Whiting.
3 ,, Hematite.
6 ,, Silica.
2 ,, Venetian Red.

Drab.

40 pounds Yellow Ochre.
10 ,, Whiting.
8½ ,, Oxide of Zinc.
1 ,, Sulphate of Barytes.

Patent Dryers.

No. 1.

25	pounds	Ordinary Barytes.
4	,,	Whiting.
2	,,	Litharge.
2	,,	Sulphate of Zinc.
2	,,	Sugar of Lead.
5	,,	Boiled Linseed Oil.
½	,,	Plaster of Paris.

No. 2.

16	pounds	Whiting.
16	,,	Barytes.
3	,,	White Lead.
¾	gallon	Boiled Linseed Oil.

No. 3.

25	pounds	Carbonate of Zinc.
25	,,	Linseed Oil.
2	,,	Borate of Manganese.

Nos. 1, 2, and 3 must all be well ground after the ingredients given have been well mixed.

Putty.

No. 1.

50 pounds Whiting (best Paris White).
4 ,, White Lead.
1 gallon Raw Linseed Oil.

The foregoing is a Cream or Ivory Colour, and any of the "Dry Bases for Paints" may be used as colouring matter where coloured Putty is required, increasing the Oil in proportion to the amount of Colour added.

No. 2.

40 pounds Whiting.
4 ,, Litharge.
2 ,, Patent Dryers.
1 gallon Raw Linseed Oil.

No. 3.

Quick Setting.

50 pounds Whiting.
8 ,, Litharge.
2 ,, No. 1 Dryers.
1 gallon Raw Linseed Oil.

NOTE :—If too stiff add more Oil.

Varnishes, Stains, Lacquers, Liquid Polishes, Glues, Pastes, &c.

Golden Varnish.

2 ounces Gum Shellac.
¾ ,, Gum Sandarac.
½ ,, Powdered Gamboge.
¼ ,, Chrome Yellow.
½ ,, Turmeric Root.
1 pint Methylated Spirit.

Bruise the Gums and Turmeric and macerate all the ingredients in the Spirit for 6 hours, shaking frequently, keeping in a warm place, then strain through muslin and add 1 ounce Red Lead, and set aside to clear. In a few days pour off the clear, bright, liquid.

Walnut Stain Varnish.

3 ounces Walnut *Spirit* Stain.
12 ,, Gum Shellac.
12 ,, Amber Resin.
4 pints Methylated Spirit.

Bruise the Shellac and Resin, and digest all the ingredients with the Spirit in a gallon tin, shaking well until dissolved (if solution is wanted quickly, dip the tin occasionally in hot water); when dissolved strain through muslin.

NOTE.—The Spirit Stain for this and following Recipe may be obtained from any leading Aniline Colour Works.

Mahogany Stain Varnish.

2 ounces Mahogany Spirit Stain.
12 ,, Gum Shellac.
4 ,, Gum Sandarac (Juniper).
12 ,, Amber Resin.
4 pints Methylated Spirit.

Proceed as in the previous Recipe.

French Polish.

Superior.

¾ ounce Gum Benzoin.
12 ,, Gum Shellac.
3 ,, Gum Juniper.
¼ ,, Powdered Dragon's Blood.
½ ,, Borax.
4 pints Methylated Spirit of Wine.

Proceed as in the foregoing Recipes.

French Polish No. 2.

½ ounce Gum Copal.
½ ,, Gum Arabic.
2 ,, Shellac.

Grind the Powders, then mix and dissolve in one quart Methylated Spirit.

French Polish No. 3.

Red.

5 ounces Orange Shellac.
1 ,, Dragon's Blood.
1 pint Methylated Spirit.

Bruise the Shellac and Dragon's Blood, then dissolve in the Spirit.

Pale Varnish.

7 ounces White Shellac.
2 ,, Benzoin.
2 ,, White Resin.
1¾ ,, Gum Mastic.
1 ,, Gum Juniper.

Rub down and dissolve in 2 pints Methylated Spirit.

Orange Varnish.

½ pound White Shellac.
½ ,, Dragon's Blood.
½ ,, Gamboge.
6 ounces Anotta.
½ ,, Saffron.

Pound all these ingredients separately, then mix and put into tin containing half gallon Spirit of Wine and heat slowly for a few days, agitating occasionally.

Brown Varnish.

1 pint Methylated Spirit.
4 ounces Orange Shellac.
2 ,, Gum Juniper.
1 ,, Gum Benzoin.
½ ,, Resin.

Bruise Gums, Shellac, and Resin, then add to Spirit, keep warm and agitate.

Mastic Varnish.

Take 1¼ lbs. selected Mastic and digest in one gallon Rectified Oil of Turpentine; when quite dissolved strain well.

White Spirit Varnish.

1 ounce Gum Juniper.
2 ,, Gum Benzoin.
4¼ ,, Gum Shellac.

Bruise and dissolve in one pint Methylated Spirit.

Finishing Furniture Varnish.

31 ounces Shellac.
6 ,, Venice Turpentine.
2 ,, Colophony.
½ gallon Methylated Spirit.

Black Varnish

18 ounces White Shellac.
3½ ,, Lamp Black.
2 ,, Benzoin.
¾ gallon Methylated Spirit.

Pale Varnish.

20 parts Gum Copal.
1½ ,, Camphor.

Rub down and dissolve in

80 parts Oil of Turpentine.
18 ,, Oil of Lavender.

Wood Stains and Polishes.

Red Polish.

12 ounces Orange Shellac.
3¼ ,, Dragon's Blood.
3 pints Methylated Spirit.

Brown Polish.

4½ ounces Shellac.
1 pint Methylated Spirit.

Black Polish.

12 ounces White Shellac.
3 pints Methylated Spirit.
6 ounces Vegetable Black.

Mahogany Stain.

1 pint Spirit of Wine.
1 ounce Dragon's Blood.
½ ,, Carbonate of Soda.

Black Stain.

1 gallon Vinegar.
5 pounds Ground Iron Scales.
1 ,, Lamp Black.
If too thick add more Vinegar.

Marone Stain.

To produce a rich Marone or Ruby, steep Red Janders Wood in Rectified Naphtha and stir into the solution a little Cochineal ; strain or lawn for use.

Mahogany Brown.

Put into a vessel say 4 pounds of Bi-chromate of Potash, and as many ounces of Burnt Umber, let it stand a day or two then strain or lawn for use.

Vandyke Brown.

2 pints Spirit of Wine.
3 ounces Burnt Umber.
1 ,, Vandyke Brown Colour.
1 ,, Carbonate of Soda.
½ ,, Potash.

Orange Stain.

1½ pints Methylated Spirit.
4 ounces Orange Shellac.
½ ,, Pearl Ash.
¼ ,, Dragon's Blood.

French Polish.

¾ ounce Gum Benzoin.
12 ,, Gum Shellac.
3 ,, Gum Juniper.
4 pints Methylated Spirit of Wine.
¼ ounce Powdered Dragon's Blood.
½ ,, Borax.

Bruise Gums, &c., and macerate all the ingredients in the Methylated Spirit, shaking well until dissolved, then strain through muslin or a fine straining flannel.

The solution may be hastened by dipping the tin in hot water.

Red Furniture Paste.

6 pints Soft Water.
6 ,, Turpentine.
3 pounds Beeswax.
1½ ounces White Wax.
18 ,, White Soap.
12 ,, Red Lead.

Cut up Soap and dissolve in water by aid of heat, then evaporate to 6 lbs.

Melt Waxes and add Turpentine in which Red Lead has been stirred, pour into this the Soap solution and stir until it is nearly cold; if a darker colour is wanted add more Red Lead, 4 to 6 ounces.

Waterproof Composition.

1 pound Paste Black.
8 ounces Liquid Terebine Dryer.
2 ,, Resin.
4 ,, Turpentine.
3 pints Linseed Oil.

Melt Resin by heat, add Turpentine and one quart Linseed Oil.

Mix Paste Black with other pint of Linseed Oil and Terebine Dryers, then mix the two liquids together.

Paint over with an ordinary paint brush, giving two or three coats if required. Paste Black is the stiff black paste.

Furniture Cream.

12 ounces White Soap.
144 ,, Boiling Water.

Boil down to 120 ounces and add to it previously melted

8 ounces White Wax.
1 pound Beeswax.
4 ,, Spirit of Turpentine.

Melt Waxes in a Water Bath, add Turpentine carefully, and whilst still warm add Soap solution, stirring well until it cools.

A little to be rubbed on the furniture with a flannel and then polished with a dry duster.

Glass Cleaner.

6 pounds Prepared Chalk.
1½ ,, Powdered French Chalk.
2¼ ,, Phosphate Calcium.
2¼ ,, Quillia Bark.
18 ounces Carbonate Ammonia.
6 ,, Rose Pink.

Let all the ingredients be in fine powder, mix, and pass through a muslin sieve.

Directions.—With soft water make the powder into a liquid of the consistence of cream, and apply to the glass by means of a soft rag or sponge, allow it to dry on, wipe off with a cloth and polish with a chamois leather.

Oak Varnish Stain.

10 ounces Oak Spirit Stain.
40 ,, Gum Shellac.
16 ,, Gum Juniper.
3 pounds Amber Resin.
8 ounces Methylated Ether.

Methylated Spirit of Wine to make 2 gallons.

Mix Ether with Spirit of Wine (280 ounces), then having bruised Gums and Resin, digest in above, shaking well in a four or five gallon drum until dissolved; lastly, strain through muslin and keep well corked.

Oak Spirit Stain can be had of any leading Aniline Colour Manufacturer.

Ebony Stain Varnish.

8 ounces Ebony Spirit Stain.
24 ,, Gum Shellac.
10 ,, Gum Juniper.
24 ,, Amber Resin.
1 gallon Methylated Spirit.

Bruise Gums, &c., and proceed as in Oak Varnish Stain.

Ebony Spirit Stain can be obtained of any leading Aniline Colour Manufacturer.

Picture Varnish.

10 ounces White Shellac.
12 ,, Gum Juniper.
4 ,, Gum Mastic.
12 ,, Methylated Ether.
4 pints Methylated Spirit of Wine.

Mix Ether and Spirit, and having roughly powdered Gums, &c., mix, shaking well until dissolved, then add

8 ounces Powdered White Lead.

Shake well and set aside for a few days to clear, then pour off the bright liquid, reserving the cloudy part for next batch.

Cleansing Paste for Gloves, &c.

¼ pound White Curd Soap.
¾ ,, Rose Water.
80 grains Powdered Borax.
2 ounces Spirit of Wine.

Pare Soap and dissolve in Rose Water by aid of heat, in a saucepan, adding Borax during solution. On cooling add Spirit of Wine, then pour into tins before it sets too thick.

Directions for Use.

Take a dry flannel and rub a little of the Paste on it, rub well on the gloves, when dirt and stains will at once disappear. For grease on cloth it is better to use a damp cloth and rub smartly.

Waterproof Glue.

10 parts Linoleate of Manganese.
20 ,, Best White Glue.
5 ,, Water.
2 ,, Yellow Oxide of Lead.

Soak the Glue in the Water until the latter has become absorbed, then gently heat it to render it fluid, meanwhile heat the Linoleate of Manganese to about 400° Fahr., and stir in the hot melted Glue. When well incorporated mix in the Lead Oxide, and if too thick, thin with more hot Linoleate of Manganese. As this compound dries very quickly it is best to use it hot and fresh prepared, as it does not readily melt when heated, owing to the oxidizing action of the lead salt on the constituents of the Linoleate, whereby insoluble linoxide is formed.

Fireproof Glue.

8 parts Raw Linseed Oil.
1 ,, Glue or Gelatine.
2 ,, Quicklime.

PREPARATION.—Soak the Glue or Gelatine in the Oil for 10 to 12 hours, and then melt it by gently heating the Oil, and when perfectly fluid stir in the Quicklime until the whole mass is homogeneous, then spread out in layers to dry gradually, out of the sun's rays. For use, re-heat the Glue in a glue-pot in the ordinary way of melting glue.

Marine Glue.

17 parts Cabinet Maker's Glue.
23 ,, Water.
2 ,, Litharge.
6 ,, Acetic Acid.
8 ,, Raw Linseed Oil.
6 ,, Sulphate of Lead.

PREPARATION.—Let the Glue soak in the water until all has been dissolved, then melt it and stir, heating and stirring in the Acid; meanwhile heat the Oil and Litharge for 10 to 15 minutes, and then stir in the hot Glue, finally add the Lead Sulphate to colour the compound.

Liquid Glue.

8 ounces Transparent Glue.
8 ,, Diluted Nitric Acid.
1½ grains Methylated Spirit.
1 drachm Benzoic Acid.

Cut up Glue into small fragments and place it in a wide mouthed Bottle, add Nitric Acid and stir frequently until dissolved. Dissolve the Benzoic Acid in the Methylated Spirit and add to above.

For White, use transparent White Gelatine (second quality) in sheets. Cut up and proceed as before. Should be kept well corked.

Glucotin.

A New Cement.

1	ounce	Russian Isinglass.
¾	,,	Transparent Gelatine.
6	,,	Water.
1	,,	Strong Acetic Acid.

Steep Isinglass and Gelatine (which should be cut up into small fragments) in the Water for two hours, transfer to a water bath and melt, now add to it Acetic Acid and evaporate to 4½ ounces, then add

½ ounce Spirit of Wine.

Bottle before it solidifies.

Directions for Use.

Melt the Glucotin when required for use by placing the bottle in hot water, apply a thin coating to the edges of broken articles, press tightly together and set aside until firm.

Inks.

Printing, Writing, Stamping, Copying, and Lithographic; Sealing Waxes, &c.

Blue Black Copying Ink.

7¾ pounds Extract of Logwood, best quality.
8½ ounces Crystallised Sulphate of Iron.
8½ ,, Crystallised Sulphate of Copper.
1 pound Sugar (Tate's White Sugar will do).
25 pints Water (free from lime).
1 pound Yellow Chromate of Potash.
1¼ ounces Indigo, finely powdered.
5 quarts Water (distilled).
25 ounces by weight Sulphuric Acid.
60 ,, fluid Basic Sulphate of Iron.
50 ,, fluid measure Glycerine.

Method of Preparation.

Boil the 25 pints of Water, and while boiling dissolve therein the Logwood Extract, Sulphates of Iron and Copper, and filter or strain off this fluid and call it No. 1.

Dissolve the Yellow Chromate of Potash in as little water as possible, and stand this solution aside, calling it No. 2.

In an earthenware vessel put the Indigo, and pour on it the Sulphur (Sulphuric Acid), and when all intumescence has ceased and the Indigo has completely dissolved, add the five quarts of Distilled Water (cold) and set aside, calling it No. 3.

To prepare the liquid Basic Sulphate of Iron, put some crystals of Ferreous Sulphate into a bottle with twice their weight of water and a quarter their weight of Nitric Acid, cork and, when the crystals have dissolved, gradually add a few more at a time, until the liquid will not dissolve any more, then pour off the supernatant liquid for use. This is the liquid that gives the blue-black tone to the ink.

Add the solution (No. 2) of Yellow Chromate to the Logwood Extract solution (No. 1), then add the Glycerine, and finally put in the Indigo solution, stir well and correct the redness of the mixture by adding the liquid Basic Sulphate of Iron. The result will be a plum colour, but on exposing it to the air in open vessels for a week or two it will eventually exhibit a damson blue-black hue. Do not put more than the quantity given of liquid Sulphate of Iron, or you will have the compound turn brown.

To prepare a cheaper product, before straining the Logwood solution (No. 1) dilute it with about twice its weight of water, and boil for about 15 minutes.

Red Ruling Ink.

1 gallon Best Malt Vinegar.
16 ounces Ground Brazil Wood.
12 ,, Alum.
1 pint Saturated Solution of Tannic Acid.

Heat the Vinegar in an earthenware vessel until just simmering, then put in the Brazil Wood and continue the simmering for 30 minutes, then add the Alum, and when that has dissolved strain it, and to the fluid portion add the Tannic Acid solution. This prevents the colour spreading in the fibre of the paper.

Ink for Rubber Stamps.

2 ounces Aniline Blue, Black, or Violet.
2 ,, Methylated Spirit.
1½ ,, Glycerine.
1 ,, Mucilage of Gum Arabic.
6 ,, Treacle or Golden Syrup.
Enough boiling water to make 16 ounces.

Place Aniline Colour (kind desired) in an evaporating dish with 6 ounces of boiling water, stir until dissolved with a glass rod, add Glycerine and Treacle, then Mucilage, withdraw heat and add Methylated Spirit, making up the product to 16 ozs. with water.

Indelible Marking Ink.

1 ounce Crystallised Nitrate of Silver.
1½ ,, Carbonate Soda Crystals.
160 grains Tartaric Acid.
2 ounces Liquid Ammonia (or sufficient).

Indelible Marking Ink.—CONTINUED.

80 grains Aniline Black.
5 drachms Glycerine.
8 ounces Distilled Water.

Dissolve the Nitrate of Silver and Carbonate of Soda separately in 3 ozs. Distilled Water, mix the solution, collect and wash precipitate well with Distilled Water ; now introduce precipitate (moist) into a Wedgewood mortar and add to it the Tartaric Acid dissolved in 1 oz. Distilled Water, stir until effervescence ceases then introduce liquid Ammonia enough to dissolve precipitate. Having dissolved Aniline Black in 1 oz. boiling water, add it to above, then add Glycerine and Distilled Water enough to make the product 8 fluid ounces.

Graph Composition.

¾ pound Transparent Gelatine.
2 ,, Water.
3 ounces Loaf Sugar.
4½ pounds Glycerine.
1 ounce Fine Powdered White Lead.
⅛ ,, Oil of Cloves.

Cut up the Gelatine and pour water over it, let it stand 6 hours, transfer to a saucepan and melt by heating, then add Glycerine and Sugar, stirring until dissolved, now introduce Oil of Cloves and dry White Lead, stirring diligently ; finally pour into tins, allowing composition to be one-half to one inch thick.

Graph Ink.

1½	drachms	Aniline Violet.
1	,,	Methylated Spirit of Wine.
1	drachm	Mucilage of Gum Arabic.
1	ounce	Boiling Water.

Mix well together.

Red Brown Lithographic Ink.

4	parts	Mutton Tallow.
4	,,	Curd Soap.
4	,,	Yellow Wax.
3	,,	Orange Shellac.
2	,,	Mastic Resin.

For Colouring Matter take sufficient of a compound prepared by mixing in dry powder

15	parts	Prussian Brown.
1	,,	Vermilion.
1½	,,	Lamp Black.

All parts are by weight.

Melt together the Tallow, Soap, and Wax, and while almost hot enough to ignite, gradually work in the Mastic Resin in fine powder, and when this has all incorporated add the Shellac and directly it has become homogeneous by mixing well (you must keep the compound hot enough to melt these readily or it will form in lumps and not unite with the other ingredients), then add the Colouring Matter and cut up into discs or cakes. When it has set hard enough for use the Ink is rubbed down in Lavender Oil (Oil of Spike Lavender is the cheapest) or else in water, as preferred for the work in hand.

Olive Green Lithographic Ink.

The ingredients for this are identical to those for Red Brown.

For Colouring Matter take 8 parts of the following :—

2 parts Yellow Ochre.
1 „ Lamp Black.

and just sufficient Indigo to produce the desired Olive hue.

The method of manufacture is precisely the same as for Red Brown Ink.

Lithographic Printing Ink.

The apparatus required for boiling the Oil for making this Ink consists of a boiling vessel wider at the top than the bottom and large enough to hold double the quantity of oil to be boiled at one operation. It should have a rim at the top to catch any oil that overflows in boiling which, if allowed to boil over into the fire, would cause a conflagration. The boiling vessel should also be arranged so that it can readily be lifted away from the source of heat should it catch alight, for Linseed Oil in boiling swells up considerably owing to the escape of aqueous vapour generated from the albuminous matter inherent in raw oil and when once the oil begins to rise it will continue to do so until it has all flowed out of the vessel unless the temperature of the oil be lowered ; to do this you must either rake out the fire or remove the vessel from the source of heat, or throw some clean *dry* sand (not damp, or an explosion would

occur, *i.e.*, the oil would be spirted out of the vessel) into the oil; this will cool it down quickly.

The boiling vessel should also be provided with a lid or cover that fits closely and can be quickly and easily put on to extinguish any flame should the oil ignite.

Linseed Oil, Varnish, or Printers' Oil.

Method of Preparation.

Half fill the boiling vessel with raw Linseed Oil and cause it to boil with the lid off until the smoke nearly ignites when a light is applied (this should be done by means of a long stick so as not to harm the operator). When the boiling oil has reached this stage set a light to the smoky vapour, remove the vessel from the fire and allow the oil to burn until a portion taken out on the end of a long rod can be drawn into threads between the finger and thumb, then put the lid on to extinguish the light and put in common resin in powder in the proportion of one pound to every quart of burnt oil in the vessel, add 8ozs. of Brown Soap to the same proportion of oil. The Soap must be cut in thin slices so as to readily dissolve and only added gradually because, as the heat disengages the water that is present in the Soap, it causes the oil to rise like the aqueous vapour from the raw oil when first heated. When all the Resin and Soap has been added and the whole is homogeneous the compound is ready for grinding up with the pigments. The above compound is suitable for grinding up with Red Oxides of Iron, Red Lead, or Carmine Lakes. The grinding is done with a muller on a stone slab.

Printers' and Lithographic Varnish.

The same apparatus is used for preparing this article as that required in boiling oil for grinding lithographic colours, but the process of manipulation is slightly different.

Half fill the boiling vessel with Raw Linseed Oil and heat this until the white vapour that is given off ignites, then set the Oil alight and allow it to burn until reduced one-sixth in bulk, then put a thick slice of dry Bread in the Oil and stir it about until it is brown ; this is to absorb some of the greasy matters in the Oil that would prevent the Varnish from printing clearly. Remove the Bread and again set the Oil alight, and keep the flame burning brightly but not too high (this is regulated by the temperature of the Oil), then repeat the process of boiling a slice of Bread in it, having first extinguished the flame. Take out one quarter of the Oil and set it aside to cool. When cold it is fit for use as a thin varnish if it is of a syrupy consistency.

Next set the remainder of the Oil alight again, and after burning for a short time extinguish it ; remove one-third of it for medium varnish. Again burn the remainder of the Oil and, after extinguishing it, divide into two equal parts and return one for strong Varnish. Set fire to the remainder and continue the burning until it is thick and ropy.

Ink Powder.

1 ounce Extract of Logwood (English).
48 grains Bichromate of Potash.
36 ounces Crystallised Carbonate Soda (powdered).
2 drachms Gum Arabic (powdered).
16 grains Powdered Indigo.

Reduce Essence of Logwood to a fine powder, then add other ingredients in order given, mixing well.

Ten grains added to a teaspoonful of water make a capital jet black ink.

Oil Blacking.

6 pounds finely ground Ivory Black.
3 ,, Treacle.
1½ ,, Common Castor Oil.
8 ounces (fluid) Oil of Vitriol.
8 ,, Malt Vinegar.
3 ,, Green Copperas.
1 ,, Oil of Cassia.

Mix Oil of Vitriol gradually with Castor Oil; then add Vinegar in which Green Copperas has been dissolved.

Add above and Treacle to Ivory Black and also Oil of Cassia, and stir until a smooth paste is obtained, wrap in "Oiled Paper." If likely to be kept long use 4 ounces more Castor Oil.

Nonsuch Gloss.

For Enamelling Boots and Shoes.

10 ounces Gum Shellac.
4 ,, Powdered Borax.
1 drachm Aniline Blue.
7 ,, Aniline Black.
70 ounces Boiling Water.

Dissolve Aniline Colours by boiling in water, and strain. To strained Liquor add Shellac (previously powdered) and powdered Borax. Boil a few minutes until dissolved, allow it to cool, and then strain.

Directions for Use.

By means of a sponge attached to a strong wire, apply a thin coating of the Gloss, and allow it to dry on, when a lustrous polish will result.

Writing Ink.

1¼	ounces	English Extract of Logwood.
15	,,	Lime Water.
½	drachm	Carbolic Acid.
3	,,	Hydrochloric Acid.
¼	ounce	Glycerine.
⅛	,,	Bichromate of Potash.

Distilled Water to make up to 30 ounces.

Dissolve the Extract of Logwood in half-a-pint of Water by aid of heat, in a water bath, whilst hot add Hydrochloric Acid, then the Carbolic Acid and Glycerine mixed.

Dissolve Bichromate of Potash in the Lime Water and add to foregoing, making up to 30 ozs. with water, set aside for a few days and decant clear solution.

NOTE.—In this Recipe English Extract of Logwood *must* be used.

Good Mercantile Ink.

1 pound Aleppo Galls.
½ ,, Logwood Chips.

Put in one gallon of boiling Soft Water. Bruise the Galls and simmer all together for three or four hours. Strain whilst hot. To this add

10 ounces Pure Sulphate of Iron.
5 ,, Gum Arabic.
1 ,, Glycerine.
1½ ,, Bruised Cloves.

Stir frequently, and at the end of 14 days strain. This Ink improves with age. Use an enamelled vessel.

Violet Ink.

Take by weight
1 part Aniline Violet Powder.
2 ,, Methylated Spirit.
4 ,, Pure Glycerine.
10 ,, Soft Water.

Mix the Liquids and dissolve the Powder therein, agitate frequently until amalgamated.

Gold Ink.

30 grains Chrome Yellow.
1 ounce Mucilage.
¼ ,, Pale Gold Bronze.
30 drops Spirit of Wine.

Rub down the Chrome Yellow with the Mucilage in an earthen mortar until smooth, then add the Gold Bronze and Spirit of Wine and make up the quantity to 2 ounces with Rose Water.

Silver Ink.

30 grains Oxide of Zinc.
1 ounce Mucilage.
40 drops Spirit of Wine.
3 drachms Silver Bronze.

Rub together until perfectly smooth the Zinc and Mucilage, then add the Spirit of Wine and Silver Bronze and make up the quantity to 2 ozs. with water.

SEALING WAXES.

NOTE.—In making Sealing Waxes great care must be taken to mix the Colouring Matter to a *paste* with Spirit or Oil of Turpentine before adding to the other ingredients. Unless this is done the Wax will not be of a regular tint.

Red.

2	ounces	Amber Resin.
1¼	,,	Venice Turpentine.
3	,,	Orange Shellac.
¾	,,	Vermilion.
¼	,,	Carbonate Magnesia.
20	grains	Benzoic Acid.

Melt the Resin, add Turpentine carefully, and then the Shellac, employing gentle heat until liquefied. Mix the Powders and add to liquid, stirring well; when sufficiently amalgamated withdraw heat and pour into moulds.

Green.

Pursue the same course as for Red, using the same ingredients except the Vermilion, for which substitute 1 ounce Emerald Green Colour.

Black.

4	ounces	Venice Turpentine.
9	,,	Shellac.
½	,,	Colophony.

Mix to a paste 2½ ounces best Lamp Black in sufficient Oil of Turpentine to moisten, and add this to the other ingredients.

Red Brown.

4	ounces	Amber Resin.
2½	,,	Venice Turpentine.
6	,,	Orange Shellac.
½	,,	Light Magnesia.
1	,,	Vermilion.
¾	,,	Best Umber.

Gold.

4	ounces	Amber Resin.
2½	,,	Venice Turpentine.
6	,,	Orange Shellac.
½	,,	Light Magnesia.
1¾	,,	Gold Bronze Powder.

If a superior quality is wanted, use instead of Powder, Gold Leaf; where Magnesia is used in making Waxes, it is best to moisten it with Oil of Turpentine and make it into a paste.

Bronze.

4	ounces	Amber Resin.
2½	,,	Venice Turpentine.
6	,,	Orange Shellac.
¾	,,	Magnesia.
1	,,	Gold Bronze Powder.
¾	,,	Emerald Green.

Golden Brown.

4	ounces	Amber Resin.
6	,,	Orange Shellac.
2½	,,	Venice Turpentine.
½	,,	Carbonate Magnesia.
1	,,	Umber.
¾	,,	Yellow Ochre.

First calcine the Yellow Ochre, and with gradual heat it will change to a rich golden shade, slightly pink, as soon as this tint appears it is fired sufficiently. Now mix the Ochre, Umber, and Magnesia with sufficient Oil of Turpentine to form a thick paste, then add to the melted Resin Turpentine and Shellac, and heat very gently, constantly stirring until properly amalgamated. Pour into moulds to stiffen.

Sealing Waxes any shade almost may be produced by taking the first four ingredients given in Golden Brown, adding from 1½ to 2 ounces of the Dry Colours under the headings of "Underglaze Colours," or "Pigment Colours." Colours under the heading of "Enamel" and "Majolica" must not be used for the purpose.

Some of the Stains for Colouring Glazed Bricks would also do, and would produce Waxes of the most varied and beautiful shades.

Soaps, etc.

A Good Bar Soap.

The ingredients given are for making about 10 cwt. of Soap at a time.

15	pounds	Tallow.
15	,,	Sol. Soda.
56	,,	Resin.
28	,,	Stone Lime.
10	,,	Palm Oil.
560	,,	Soft Water.

Method of Manufacture.

Make a caustic Lye of the Soda and Lime by boiling them in the water until the compound is homogeneous.

In a second boiler heat the Resin, Tallow, and Palm Oil (the addition of the latter gives an agreeable Yellow Colour to the Soap) and stir well until thoroughly incorporated.

Now gradually mix the Lye with the melted Tallow, etc. (both compounds being boiling hot) and continue stirring the mixture all the time while adding

the Lye, and for 15 to 20 minutes after (the exact time can only be determined by actual experience) but do not stir too long or the saponaceous mass will separate again. Endeavour to stir the mass so that it does not show any streaks of soap and lye here and there, but presents an uniform appearance.

The apparatus needed is two boilers which can discharge their contents simultaneously into an iron tank about 18 inches in depth, and as the contents of both boiling kettles are run off into the tank, an operator at each side with a long paddle or stirrer should well mix the contents. When the mixture has been sufficiently stirred leave the mass to settle for some hours (12 to 24), then, if a clear separation of the soap from the lye underneath has not taken place sprinkle some common salt, not too much, over the surface of the soap and if the latter is fluid enough stir up just sufficiently to allow the salt to mix with it. This will expel all alkaline water from the soap and permit it to float on the surface of the liquid in a semi-hard mass. After a few hours more rest draw off the liquid beneath the soap and allow the latter to remain undisturbed until hard enough to cut up.

If preferred, instead of doing this, the semi-fluid mass can be ladled out into wooden moulds or boxes, the insides of which have been moistened with water to prevent the soap adhering, and thus when the soap is sufficiently hard it can be cut up into bars in the usual way.

Sanitary Soft Soap.

Hot and Cold Processes.

Saponify 100 parts Palm Oil with
17½ ,, Caustic Potash.

or, 70 parts of a solution of Potash of 35° Bc., or else a solution of 20° Bc.

Heat the Palm Oil to 100° Fahr., stir in the Lye gradually until the saponaceous combination takes place, but before it does so add the Crystals of Carbolic Acid, 1 to 2 per cent., then cover up the boiler and let the mass stand for a few hours. The Soap can be stiffened by adding and stirring more or less salt water of 18° Bc.

A Good Soft Disinfectant Soap.

Another Process.

3 parts Potash.
4 ,, Grease (any kind).
75 ,, Water.

1 to 2 ounces of Carbolic Acid Crystals to each 300 parts of this compound.

PREPARATION.—Dissolve the Potash in part of the water so as to make a Lye of about 122° Bc., and mix this with about one-third of the Grease, and heat the whole to 100° Fahr. Separately melt the remainder of the Grease and stir it in, and work it until homogeneous, and then turn this out into barrels or troughs large enough to hold the whole, and having dissolved the Acid Crystals in the remainder of the water gradually add that to the mass from

time to time until it has all been absorbed, this will occupy several days, during which the mass should be well stirred. In about a fortnight the Soap will be ready for use.

Cleansing Soap for Fabrics.

One of the best compounds for removing grease and renovating clothes that cannot be washed in the ordinary way, is the following Cleansing Soap used by dyers and cleaners :—

64 parts Castile Soap (solid).
8 ,, Dry Carbonate of Potash.
20 ,, by weight of Water.
1 ,, Deodorised Spirit of Wine.
1 ,, Camphor.
1 ,, Liquid Ammonia.
1 ,, Bone Black.

The Bone Black may be omitted if colour is objectionable.

Preparation.—Dissolve the Potash Salt in the Water, and then dissolve the Soap in the Lye thus made (the Soap should be shreded to facilitate its solution), heat the mixture and stir it until stiff enough to be moulded, and then, having dissolved the Camphor in the Spirit and mixed that with the Ammonia, make it into a paste with the Black colouring matter, and work it into the hot Soap, and, when well incorporated, press into moulds or form into cakes.

Transparent Glycerine Soap.

66½	parts	Best Mutton Tallow.
66½	,,	Cocoa Nut Oil.
48	,,	Castor Oil.
83	,,	Soda Lye of 40° Bc.
35	,,	Deodorised Spirit of Wine.
57	,,	Glycerine.
30	,,	White Sugar.
10½	,,	by weight of Water.
15	,,	suitable Perfume.

PREPARATION.—Mix the Tallow, Nut, and Castor Oils by heating together, and then saponify the mixture with the Soda Lye. Dissolve the Sugar in the Water separately and add the Perfume to the Spirit and mix this with the Glycerine, then stir the Sugar, Sugar Water, and Water into the soapy mass, and finally add Spirit and Glycerine mixture, and give it 6 or 8 hours rest; when cooled to 130° Fahr. put the Soap into moulds and allow it to congeal quickly. It is more economical to put the Perfume in the completed compound last.

A Self-Cleansing Soap.

10	gallons	Water.
8	pounds	Crystallized Carbonate of Soda.
8	,,	Common Yellow Soap.
2	,,	Cocoa Nut Oil.

PREPARATION.—Dissolve the Soda Crystals in the Water and then dissolve the Soap therein by boiling for two hours, allowing the steam to escape, then run off the Soap to cool and solidify, and when in a fit condition cut up or pour into moulds.

To use the Soap add 8 ounces of it to 1 gallon of Water, then steep the clothes therein for from 10 to 12 hours, then boil, wring out, rinse and dry.

A Good Scouring Sand Soap.

1 part Cocoa Nut Oil.
2 ,, Soda Lye 20° Bc.
1 ,, White Silver Sand.

The Perfume per 50lb. of Oil used consists of

3 ounces Lavender Oil.
2½ ,, Oil of Thyme.
1½ ,, Oil of Cumin.

PREPARATION.—Melt the Oil and saponify it by stirring it into the Soda Lye, and when well incorporated stir in a little common Salt (nace) to expel the caustic from the soapy mass, and then strew on top Calcined Soda, to render it hard ; cover up the boiler and give the Soap several hours' rest, and when it has set solid enough to be run off into the frames, do so, but before doing this skim off all scum left by the Soda Salts, and finally rake in the Sand—one operator raking the Soap while a second sifts in the Sand.

Self-Shaving, or Depilatory Soap.

20 parts Starch Powder (Wheat Starch).
120 ,, Water.
34 ,, Sulphide of Sodium.
30 ,, Sulphide of Barium.
180 ,, Water.
36 ,, Palm Oil.
21 ,, Glycerine.

PREPARATION.—Dissolve the Starch Powder in the 120 parts tepid Water in one vessel, and set aside for use when wanted In a second vessel dissolve the Soda Sulphide (crystals), and stir it and the Barium Sulphide in the 180 parts of Water, and add the Glycerine. In another separate vessel melt the Palm Oil.

To mix the compounds : Make the Soda solution boiling hot, stir up the Starch solution, and then gradually stir it into the boiling Soda solution, stirring well and until the Starch thickens, then stir in the melted Palm Oil, mix all well together and add the Perfume (Citronelle Essence, or Mirbane, or Oil of Lavender, &c.) Before the mass cools and congeals pour it into porcelain pots or wide mouthed stoppered bottles.

Directions for Use.

Rub it into the hair to be removed until the hair loses its crispness and filamentous form, and becomes of a pulpy mass, then wash the part with water and the hair will all be removed. If the skin smarts at all rub in a little Olive Oil or Vaseline.

Soap for Washing Animals, Dogs, Birds, etc.

2 parts Spermaceti.
1 ,, Camphor.
52 ,, Curd Soap.
Water, quantity sufficient.

PREPARATION.—Cut up the Soap and dissolve in 4 to 6 times its weight of Water, and then boil the mixture until the Soap has dissolved, meanwhile,

crumble up the Camphor to a powder, and shred the Spermaceti Wax, and when that has dissolved (keeping the melting pot over the fire), pour into glazed vessels and stir until cold to prevent the Wax and Soap separating, and the resulting mass is more or less stiff according to the quantity of water used, and the creamy consistency depends upon constantly stirring the mixture until it sets. Use in the same way as ordinary washing soap. It cleanses fur, feather, and wool, and destroys vermin on animals.

Purifying and Bleaching Bone Fat for Soap Making.

This unpleasant substance is obtained by steam under pressure, from bones, and is often used in Soap making for Brown, Mottled, and Manufacturer's Soaps. The Soaps made therefrom are deficient in firmness and body unless some other fat is used in conjunction with it. Before this Bone Fat, Bone Oil, or Bone Tallow as it is indiscriminately called, can be used, it is required to be bleached somewhat, so as to remove its brown colour as much as possible. The amount of Caustic Soda required to saponify it is 13·87 per cent., and that of Caustic Potash 19·42 per cent. The Fat contains water, from a trace to 2 per cent., and about a quarter per cent. of mineral matter, and also many impurities that have to be removed before it can be used for Soap-making. To remove the impurities dissolve 2½ lbs. of Chloride of Zinc (this is a very poisonous substance to handle), then boil 100 lbs. of the Bone Fat from 6 to 8 hours in the solution, afterwards as a further purification

raise the temperature of the Fat to 167 deg. Fahr., then put in 2 lbs. of Soda Solution of 34 deg. to 35 deg. Bc., and 1 lb. of Sodium Chloride (previously dissolved in water) to every 100 lbs. of the Bone Fat. Keep stirring the Fat while adding these ingredients, and then let the mixture rest quietly for some time, then pour off the clear fat into wooden vats and allow it to cool down to 105 deg. Fahr.

To bleach this purified Fat, make a solution of 8 ozs. of Bi-chromate of Potash in Boiling Water (cold water will not dissolve such a large quantity of the Salt, and even at this temperature the Salt will crystallize on cooling a few degrees), mix this with 32 ounces by weight of Fuming Hydrochloric Acid, then pour this mixture into the purified Oil slowly at 105 deg. Fahr., constantly stirring, and continue to do so until the greenish colour changes into a yellowish one, then wash the Fat by means of water, using a sprinkler to do this. Two per cent. of Permanganate of Potash followed by a 2 per cent. solution of Oxalic Acid, renders the colour brighter. Wash the bleached Fat so as to remove all traces of the Oxalic Acid.

Recovering Glycerine from Soap Boiler's Lye.

Glycerine is obtained as a bye product in making Soap. For many years the lyes were thrown away as waste, but now considerable quantities of Glycerine are recovered, which are much used in making explosive compounds.

When a Metallic Salt or one of the Alkalies, as Caustic Soda, is added to Tallow, a stearite of the metal (Common Soap is Stearite of Sodium) is formed, whereby the Glycerine is eliminated. This valuable bye product is contained in the waste lye, and has formed the subject of several patents, but there is still much room for improvement. As these processes are all patented they can be worked only under a royalty, and therefore details cannot be given, but the following method or process is sufficient to enable any one to undertake the recovery of the Glycerine from the spent lye.

Draw the lye off from the Soap-pans, this contains a large quantity of Water, some Salt and Soap and a small quantity of Glycerine, and the great trouble is to concentrate the lye so that the large quantity of water is eliminated, sometimes 10 to 12 days being occupied in doing this. The Soap and Salt are easily removed.

To remove the Soap run the lye into a series of tanks alternating in size step-like, so that as the first, which should be the largest, becomes full, the liquor will flow into the second, from that into the third, and so on; by this arrangement the resinous and albuminous matters will settle, and the Soap still contained in the lyes will float on the surface, from which it is removed by skimming.

After thus freeing the lye of the solid impurities convey the purified lye to the Glycerine recovering department (wooden troughs or pipes may be used to do this) and after concentrating by heating it in a steam jacketed boiler, and allowing it to cool

somewhat, ladle out the solid salt that separates, and afterwards concentrate the lye by allowing it to flow into a tank, but before doing so let the fluid come in contact with a hot blast of air or super-heated steam, whereby the crude discoloured Glycerine is obtained. This is further purified by heating with animal charcoal to decolorise it, then distilling several times in copper stills with super-heated steam. The chief points to attend to are the neutralizing and concentrating the lye as much as possible and then separating the Salts and solid matters, and afterwards to concentrate the purified lye and mix this fluid with Oleic Acid, Oil, Tallow, or Lard, and heating the mixture to 338 deg. Fahr., in a still, by steam, and gradually raise the heat to 372 deg. Fahr. ; stir the liquor whilst being heated, and allow the aqueous vapour to escape, and when thus concentrated, saponify the liquid with lime to eliminate the Glycerine ; water is at the same time expelled, but this is removed from the Glycerine by evaporating the mixture.

White Windsor Soap.

8 pounds Common White Soap.
1 ,, Olive Oil.
1 ounce Borax.

The Soap is cut up into thin pieces and melted by heat in three pints of boiling water, with also the Olive Oil and Borax, and scented after removal from the fire with half-an-ounce of Oil of Carraway and half-an-ounce of Oil of Lavender. Pour into box or moulds to cool.

Lemon Soap.

25 pounds Common White Soap.
1 ,, Common Starch.

Cut up into thin pieces, melt the Soap by heat in three quarts of boiling water. When melted, take off the fire and colour the soap with a small quantity of Cadmium Yellow. When cooled a little add

2 ounces Oil of Lemon.
1 ,, Oil of Bergamot.
1 ,, Oil of Lemon Grass.
½ ,, Oil of Cloves.

Pour into boxes or moulds to cool. Throw coarse canvas over while cooling so as to retain the perfume.

Carbolic Soap.

Say 1¼ pounds Tallow or Lard.
1½ ,, Common Soda.
7 ounces Resin.
4 ,, Stone Lime.
1 ,, Palm Oil.

Dissolve the Soda and Lime in one quart of water. Boil until all is melted, stirring well. Remove from the fire and allow the mixture to settle, afterwards pouring off the clear lye from the top and boiling therein the Tallow, Resin, and Palm Oil. Boil gently until the mixture becomes a pasty substance, then take off the fire and add four tablespoonfuls of Carbolic Acid; pour in a box to cool, throw over the box a piece of coarse canvas so as to retain the strength of the Acid while cooling. The same Carbolic Acid is used as that sold for disinfecting.

Rose Soap.

30 pounds Common White Soap.
20 ,, Olive Oil Soap.

The above quantity of Soap should be cut up into thin pieces and thoroughly melted in two gallons of boiling water. Allow the Soap to remain on the fire until thoroughly melted; take from the fire and add 1½ ounces of Vermilion in fine powder. After the Soap has cooled a little, stir in 3 ounces Essential Oil of Rose, 1 ounce each Oils of Cinnamon and Cloves, and 2 ounces Oil of Bergamot. Pour into boxes or moulds. Soap prepared from the above is very fragrant, and is one of the finest of toilet Soaps.

Household Soap.

Small Quantity.

2 pounds Fresh Slaked Lime.
2 ,, Tallow or Lard.
2 ,, Common Washing Soda.
8 ounces Clarified Resin.

Dissolve the Soda and Lime in one gallon of soft water, boil until melted, stirring well; then remove from the fire and allow it to settle, afterwards pouring off the clear lye from the top and boiling therein the Tallow or Lard, and Resin. Boil gently on a slow fire until it becomes of a pasty substance, pour into a box to cool for 10 hours before use.

Marbled Savonettes.

By varying the colour of the powder, Savonettes of any shade or colour may be produced. A

very pleasing and marbled appearance may be given to Soaps in this way :—Melt in one vessel any required quantity of Common White Soap, say 5 lbs. Cut up the Soap in small pieces and add 1 pint of water when thoroughly melted. Put a small quantity of the Soap in a separate vessel and add to it a sufficient quantity of Ultramarine, Vermilion, or any other colour previously mixed with a little water, to stain the Soap ; now add the coloured to the white Soap, and stir round and round in one direction only until the coloured Soap has formed a series of circular veins in the mass. Care must be taken to do this slowly, so that the coloured Soap may merely streak the white Soap. Allow the Soap to cool, when it may be scooped out in small lumps with a half-round and bright trowel, and these marbled lumps may then be fashioned into balls or tablets, according to requirement.

Superior White Soft Soap.

42	pints	Soft Water.
9	pounds	Common Soap.
9	,,	Common Soda.
¼	,,	Resin.
¼	,,	Sulphate of Soda.
2	ounces	Borax.

Beat up the Resin and boil all together in a common washing boiler until all is dissolved ; when cooled for an hour add 1 ounce Sassafras Oil, and pour into lard firkins. This Soap can be used for all domestic purposes wherever Soap is required.

Superior Dry Soap.

20	pounds	Common Washing Soda.
10	,,	Common White Soap.
2½	,,	Sulphate of Soda.
1¼	,,	Palm Oil.

First, cut up the Soap into thin pieces, which can be done with a knife or soap mill; it is then spread on a tray or strong paper and allowed to dry in a room or in open air until thoroughly dry. It is then pulverised or pounded and passed through a fine sieve. Next pulverise the Common Washing and Sulphate of Soda into coarse powder, dissolve the Palm Oil by heat, and mix all well together; it is then dried and put into packets and fastened up immediately. By adding 10 pounds of Pearl Ash to the above a very superior Dry Soap is made.

Engineers' Soaps, or "Cheapeners."

No. 1.

The following Recipes produce cheap but effective Soaps for the use of engineers, mechanics, and others engaged in rough and dirty work.

Take 5 pounds Caustic Soda Powder (98 per cent.) and place it in a vessel containing 2 gallons of Water, stir until dissolved, and let the lye thus produced remain until cold. In a larger vessel suitable for mixing bulk, melt over a slow fire 35 pounds of Tallow.

Mix separately 5 pounds Ground Silica and 5 pounds China Clay with sufficient water to make it of the consistency of thick cream, and when

thoroughly soaked strain twice or oftener. The moment the tallow is melted pour the Silica and China Clay Slip into it, stirring constantly until incorporated, and then pour in gradually the Caustic Soda lye, and stir until perfect amalgamation is attained; pour out the liquid Soap into a box and keep in a warm place well covered up for 24 hours, when it will have set into a block, which may be cut up and pressed if desired.

The process of melting must be very carefully carried out, only sufficient heat being used to warm the Tallow, &c.

Engineers' Soaps, No. 2.

Saponify 50 pounds of some cheap Oil (mineral oil excepted) with 100 pounds of Lye at 20° Bc.; stiffen with 4 pounds of Salt dissolved in water to a density of 15° Bc. and add 3 pounds Soda Ash. Cover up for a few hours, then skim and run off into coolers; after being thoroughly "crutched," sift over the bulk 50 pounds of Grain Silica and thoroughly incorporate.

Colouring Ingredients for Soaps and Candles.

Numerous are the agents which have been for years in use for the Colouring of Soaps and Candles, but whilst the adaptability of several of these commodities for the successful production of the special shades required is beyond dispute, the utilization of them has now become prohibitory on account of their cost. The up-to-date manufacturer desirous of battling successfully with the more than severe competition around him, is ever on the alert for some inexpensive article which he may utilise in the place of a more costly ingredient, always providing the quality of the manufactured goods can be kept up to the usual standard of excellence. An example of this is found in the fact, that although for years Cochineal was extensively used in producing different shades of Red, that colouring matter has now been almost if not entirely abandoned in favour of Mineral Oxides or Aniline Dyes. The Colouring of Candles, Wax, and Stearine, is a more difficult process than the Colouring of Soap, arising from the fact that it is absolutely necessary that any colouring

ingredient employed by the Candle Maker must be of such a nature, or so composed, as in no way to retard the clear burning of the Candle. For this reason Colours that are soluble in water are the best. As to the methods of incorporating the different colouring agents employed with the Stearine and Wax, they are so well known (every manufacturer or skilled workman having his own pet process), that a description in this volume is uncalled for.

In Colouring Soaps a large number of Mineral Colours may be used with advantage, on account of the trifling cost of production. Many of the Formulæ under the special heading of "Underglaze Colours" (see Page 35), may be so employed, the only difficulty being that in the case of nearly all Mineral Colours, the specific gravity is somewhat high, and this necessitates the thorough "crutching" of the Soap until it becomes of such a stiff consistency, that during the process of "setting" the Colour cannot possibly sink. It must, however, be borne in mind that on account of their opacity Mineral Colours are not suitable for colouring Transparent Soaps, but in the opinion of the Authors, Mineral Colours, either used in their natural state or produced by blending and calcination, are the cheapest and therefore the most profitable agents for colouring most kinds of Milled Soaps, as well as for Soaps made by cold process. It is imperative that the Colours should be ground to an impalpable powder, otherwise the small grains unpowdered will cause the Soap to have a sharp, gritty feel when used. The writer of these notes recommends the use of

the following Recipes, some of which colours, inclusive of grinding, can be produced for 6d. per pound or less.

For Mottled Blue use	Matt Blue	...	page 40
,, ,,	Brown use Dark Brown	...	,, 45
,, ,,	Red use Crimson	...	,, 59

For Uniform Colour throughout.

For Buff use	Buff	...	page 48
,,	Pale Blue use Matt Blue	...	,, 40
,,	Chocolate use Vandyke Brown	...	,, 50
,,	Pink use Marone Pink	...	,, 49
,,	Purple use Purple	...	,, 130
,,	Grey use Mulberry	...	,, 39
,,	Green use French Green	...	,, 46
,,	Amber use Chinese Brown	...	,, 51
,,	Red Brown use Mahogany	...	,, 104
,,	Turquoise use Turquoise Stain		,, 96

The following Minerals after being ground and washed several times in boiling water will produce the results stated.

Hematite	produces	Deep Red.
Purple Oxide Iron	,,	Purple.
Oxide of Manganese	,,	Brown.
Yellow Ochre	,,	Yellow.
Yellow Ochre calcined	,,	Orange.
Umber	,,	Fawn.
Cinnabar	,,	Medium Red.

Fireproof Compositions.

No. 1.

60 parts pure Silica (in grain).
8 ,, Ground Flint.
3 ,, Plaster of Paris.
6 ,, Ball Clay.

Mix well together by passing once or more through a fine sieve, and use in the same way as cement is used.

In coating Steel or other Furnaces, first brush over the brickwork to be covered, a solution made by boiling one pound each of Silicate of Soda and Alum in four gallons of water, and follow immediately with the Composition.

No. 2.

50 parts Silica.
10 ,, Plastic Fireclay.
3 ,, Ball Clay.

Mix well.

Dyes, Colours, etc., for Textile Goods.

Aniline Black.

This black substance is produced by carefully oxidising Aniline Hydrochloride. The exact stage of oxidation must be carefully regulated or the product will be a different body (quinon). There are several suitable oxidising agents such as Chromic Acid, Potassic Bi-chromate, Ferrocyanide of Potassium, &c., but one of the easiest to manipulate is Potassic Chlorate, which by re-acting on Copper Sulphate produces Potassic Sulphate and Copper Chlorate; this is easily decomposed, as its solution gives off gases at 60° which consist essentially of Chloride Anhydrate. But one of the most useful agents for the production of Aniline Black is Vanadate of Ammonia, one part of which will do the work of 4000 parts of Copper. Many other Salts besides Copper may be used for producing Aniline Black, but the following method is one of the best to follow in making this Dye :—

40 parts Aniline Hydrochloride.
20 ,, Potassic Chlorate.
40 ,, Copper Sulphate.
16 ,, Chloride of Ammonia (Sal-ammoniac).
500 ,, Warm Water at 60° Fahr.

After warming a few minutes the mass froths up (the vapour should not be inhaled), then set aside, and if the mass is not totally black in a few hours, again heat to 60° Fahr. and expose to the air for a few days, and finally wash away all the soluble Salts and the Black is fit for use.

ANILINE BLACK SUBSTITUTES.

No. 1.

Make a solution of

30 parts Aniline (fluid measure).
10 ,, Toluidine (by weight).
60 ,, pure Hydrochloric Acid B.P. (fluid measure).
60 ,, Soluble Gum Arabic (fluid measure).

PREPARATION.—Dissolve the Toluidine in the Aniline and add the Acid, and finally the Mucilage.

No. 2.

Mix together at gentle heat

10 litres Starch Paste.
350 grammes Potassic Chlorate.
300 ,, Sulphate of Copper.
300 ,, Sal-ammoniac.
800 ,, Aniline Hydrochloride.

No. 3.

Dissolve in a vessel

A
- 8½ parts Chloride of Copper in
- 30 ,, of Water, and then add
- 10 ,, Chloride of Sodium.
- 9½ ,, Liquid Ammonia.

In a second vessel dissolve

B
- 30 parts Aniline Hydrochlorate in
- 20 ,, of Water, and add
- 20 ,, of a Solution of Gum Arabic

prepared by dissolving 1 part of Gum in 2 parts of Water.

Finally mix 1 part of "A" with 4 parts of "B," expose the mixture to the air for a few days to develop from a greenish to a black colour. Dilute for use or else dry the thick compound to a powder.

Red Dye for Textile Goods.

This shade may be obtained by means of Rose Bengalé or Grenadine (both dyes of Messrs. Brooks, Simpson, and Spiller's manufacture).

To dye the fabric with Grenadine use a mordant either of Red Liquor or Tin Salt, and work the dye bath at 130° Fahr.

The Tin bath is a solution of Stannic Chloride of 4° to 8° Tw.; to use this liquid the fabric should be worked about in it for 30 minutes, using a cold solution of this mordant, then rinsed and put into the hot dye bath and worked about until the desired shade is reached, then rinsed again and dried.

If new liquor is used as the mordant, mix 1 part of this with 4 parts of water, and after working the fabric for 1 to 2 hours in the cold liquor, wring or squeeze it out and dry, and before working it in the dye liquor, thoroughly wet the fabric by rinsing it in hot water at a spring, boil, then cool by washing in the dye bath until the shade desired is attained, and again rinse and dry.

The red liquor or Acetate of Aluminium may be made by dissolving 13 ounces of Alum in 69 ozs. of water and mixing this with a solution made by dissolving 7½ ounces of Acetate of Lime, also dissolved in 69 ounces of water, stir well, allow it to settle, and filter or decanter off the clear fluid for use, and use this mixture at 2½ deg. Tw.

To obtain this Colour with Rose Bengale,

mordant the textile for 1 hour in water containing 5 per cent. of Alazarine Oil, and then steep it for 2 hours in the dye bath of Red Liquor of 2½ deg. Tw., and after dyeing in a bath made up of ½ oz. of Rose Bengalé and 1½ ounces of Red Liquor to every 70 ounces of cotton fabric dyed, first entering the fabric at 112 deg. Fahr. and raising it to 140 deg. Fahr., working for 1 hour, or until the desirable shade is obtained then rinse and dry.

Formula for Blush Pink on Cotton Textile.

Rose Bengalé or Fast Pink will give this shade. The mordant to use is a 5 per cent. solution of Stannate of Soda and another 5 per cent. solution of Alum.

The fabric is first put into the Stannate of Soda mordant for a few minutes, then wrung out and put into the Alum mordant for about the same time, then it is again wrung out and entered in the dye bath at 120 deg. Fahr. and dyed to shade desired, and afterwards rinsed in cold water and dried.

The dye bath is made of ¼ ounce of Rose Bengalé per gallon of water. If Fast Pink is the dye used, the mordant used would be Turkey Red Oil and Red Liquor. Use 8 ounces of Turkey Red Oil per gallon of Water. Put the fabric into this, then wring out the textile and work in Red Liquor of 7 deg. Tw. for about 2 hours, then wring out and dye in a separate bath made up of Eosine, or Fast Pink, in water in which a little Alum has been dissolved.

To Dye Woollen Yarns, &c., various Shades of Magenta.

To prepare the dye bath, dissolve 1 pound of Roseine in 15 gallons of Water. For a very concentrated solution use only 10 gallons of water, while if a very much concentrated colour is needed, dissolve the dye in Methylated Spirit of Wine, and dilute this spirituous tincture with an equal quantity of water.

No mordant is required in using this colour in dyeing woollen goods, the dyeing operation simply consists of putting the goods into the dyebath at 190 deg. Fahr. and working them therein until the desired shade is obtained, then rinsing in cold water and drying.

If the water used in preparing the dye is at all alkaline, make use of the Acid Roseine dissolved in water in which a little Sulphuric Acid has been mixed, and work, gradually raising to the boiling point, and keep up the temperature for 30 minutes, or according to the shade desired. Put about 20 per cent. Sulphate of Soda into the dyebath.

To Dye Woollens Marone.

To prepare the dye bath, dissolve about 1 pound of Marone Dye in boiling water with or without the addition of Methylated Spirit of Wine. For dark shades dissolve in boiling water only slightly acidulated with Hydrochloric Acid, and filter before use. No mordant is required with this dye when dyeing wool, but for the bright shade a little Curd Soap may be dissolved in the dye bath before proceeding to dye the wool, while for the dark shade it is best to put in a little Acetate of Soda. To use the dye, first dye in a weak bath and gradually strengthen it until the desired shade is obtained, at the same time gradually increasing the temperature until just below the boiling point.

To Dye Woollens with Blue de Lyons.

Dissolve 8 ounces of Blue Dye in 1 gallon of Methylated Spirit which has been slightly soured with Sulphuric Acid, and boil the solution over a water bath until it is perfectly clear.

To prepare the dye bath add more or less of the spirituous tincture to a 10 or 15 gallons dye bath of water which has been slightly soured with Sulphuric

Acid or Alum, and heated slowly to a spring boil; keep at that temperature until the desired shade is obtained, afterwards rinse in cold water and dry.

Rich Orange on Woollen.

Dissolve 1 pound of Phosphine in 15 gallons of boiling water and stir the fluid until the Acid has dissolved. No mordant is required to dye wool. First work the goods about in a weak solution and finally in one of full strength, to which a little Acetate of Soda has been added. Keep up the temperature to just below boiling point while working the goods in the dye bath.

DYEING SILK OR COTTON FABRICS WITH ANILINE DYES.

Aniline Blue on Cotton.

Prepare a dye bath by dissolving 1 pound of Aniline Blue (soluble in Spirit) in 10 gals. of water and set it aside to settle, meanwhile prepare a mordant by boiling 35 ounces of Sumach (or 5½ ounces of Tannic Acid in 30 gallons of water), and then dissolve therein 17½ ounces Curd Soap, boil up and filter. Put the cotton goods in the hot liquid and let them remain therein for 12 hours, then wring them out and make up a dye bath at 2½ deg. Tw. with Red Liquor, and then add dye colour according to shade desired; put in the goods and work them until the colour is correct, keeping the temperature at the boiling point.

To Dye Silk a Delicate Greenish Yellow.

Dissolve 2 ounces of Citronine in 1 gallon of Methylated Spirit and keep the solution hot over a water bath until perfectly clear.

To prepare Silk fabrics wash them in a weak Soap Liquor that has been just sweetened (*i.e.*, its alkalinity turned to a slight sourness) with a little Sulphuric Acid. Work the goods until dyed to shade, and then rinse them in cold water that has been slightly acidulated with Acetic, Tartaric, or Citric Acid.

To Dye Dark Brown on Cotton.

Prepare a mordant bath of 10 lbs. of Catechu, 2 lbs. of Logwood Extract, and $1\frac{1}{4}$ lb. Magenta (Roseine) and bring to a boil, work the goods therein for three hours at that temperature, then put into a fresh dye bath made up of 3 lbs. of Bichromate of Potash and 2 lbs. of Sal. Soda, and dye to shade. These proportions are for a dye bath to dye 100 lbs. of cotton goods at a time.

To Dye Peacock Blue on Silk.

Make up a dye bath by putting 1 pint of Sulphuric Acid at 170 deg. Tw., and 10 ounces of Methylin Blue Crystal dye-liquor of 120 deg. to 160 deg. Tw. with a dye bath that will hold 80 lbs. of goods.

Put in the Silk at 130 deg. Fahr. and raise to 140 deg. Fahr., and work up to shade required.

To Dye Felt Goods.

Owing to this material being composed of animal and vegetable fibre it is not an easy matter to always produce evenness of shade. The best process to ensure success is to well steep the felt in an Acid Bath of from 6 deg. to 12 deg. Bc., and then wash away all traces of Acid. Some dyers make the Fulling Stork the medium of conveying the dye, while others partially dye before fulling, or else dye after that process.

The Fulling Stork for 72 ounces of Beaver consists of a mixture of

16 ounces Black Lead or Plumbago.
48 ,, Venetian Red.
5 ,, (fluid) Indigo Extract.

For an Ordinary Drab,

mix 12 ounces Common Plumbago.
12 ,, Best Plumbago.
15 ,, (fluid) Orchil Extract.
10 ,, Indigo Extract.

Mix into fluid paste with water and add Sulphuric Acid at 30 deg. Tw.

For the dye liquor make a boiling hot solution of the Aniline Dye and allow it to cool, then put into an earthenware vessel holding water and heat to 83 deg. Fahr., and add sufficient Dye Liquor to give the quantity of Felt the desired shade. First well moisten the felted matter (or the hair, if dyed before felting) with water and then work it about in

the above dye bath at 140 deg. Fahr., and to deepen the shade add more Dye Liquor, lifting out the material to be dyed before adding the fresh Dye Liquor, so that it can be well stirred up and thoroughly mixed with the exhausted bath.

For Brown Shades.

Bismarck Brown will give good results, particularly so if the dyed goods are afterwards steeped or passed through a weak solution (pale straw colour) of Bichromate of Potash. This will tone down all furryness and give a well-fed look to the colour.

Any of the Aniline Colours suitable for cotton or wool, or those suited for mixed cotton and wool goods, may be used.

For Blue.

Use either China Blue, Densferry Blue, or Serge Blue, first making the material acid before dyeing.

For Green.

Use Brilliant Green, and have the material neutral, *i.e.*, neither acid nor alkaline, or else steep in a bath of Sumach before dyeing.

For Plum Colour.

Use Marone (neutral or acid), and work in Acid Bath or else Sumach.

For Black.

Use Negrosine in an Acid Bath, or else mordant in two Salts and dye slightly acid.

Greases, Lubricants, Oils, etc.

Greases for Axles of Heavy Vehicles.

No. 1.

19½ parts Tallow (free from acid).
14 ,, Palm Oil.
5½ ,, Sal. Soda.
3 ,, (by weight) Water.

Dissolve the Soda in the Water and separately melt the Tallow, then stir in the Palm Oil. This may be gently warmed before adding, as it greatly facilitates its incorporation with the Tallow unless the latter be made boiling hot, when it readily melts the semi-solid Palm Oil. When these two Greases are thoroughly incorporated pour the mixture slowly into the cold Lye (or Soda solution), and stir well until the whole mass is homogeneous. This Lubricant can be made less solid by decreasing the Tallow or increasing the Palm Oil.

No. 2.

8 parts Slaked Lime (in powder).
10 ,, Resin Oil.

Slowly sift the Lime into the Resin Oil, stirring it the whole time to thoroughly incorporate, and

then gently heat the mixture and stir until of a syrupy consistency. Colour this compound with Lamp Black, or a solution of Turmeric in a strong solution of Sal Soda.

For Blue Grease 275 parts of Resin Oil are heated with one part of Slaked Lime and then allowed to cool ; the supernatant oil is removed from the precipitated matter, and 5 or 6 parts of the foregoing Resin Oil Soap are stirred in until all is of a soft, unctuous mass.

No. 3.

1 part Sal Soda.
1 ,, Tallow, free from rancidity.
20 ,, Water.
20 ,, Rape Seed Oil.

Dissolve the Soda in the Water and the Tallow in the Oil, heat both compounds to the same temperature and then mix. Heat the compound up to boiling point and then allow it to cool, when it is ready for use.

No. 4.

Resin Oil Soap, quantity sufficient.
1 part Palm Oil.
53 ,, Resin Oil.

3 to 4 quarts Soda Lye of medium strength made from Caustic Soda.

Melt together equal parts of Palm Oil and Resin Oil Soap, then put in the Resin Oil, and after well stirring put in as much more of the Resin Oil Soap as will make the compound of the desired unctuousness, then well mix in the Soda Lye and incorporate to saponaceousness.

No. 5.

Another Grease or Soap like the former is made by melting together

12 parts Tallow.
30 ,, Palm Oil.

and then saponify the mixed Grease with 9 parts of Soda Lye of suitable strength, and as the mass thickens dilute with 8 parts (by weight) of water free from lime.

A Grease for Locomotive Axles

is prepared by saponifying a mixture of

50 parts Tallow.
28 ,, Palm Oil.
2 ,, Sperm Oil.

Mix in Soda Lye made by dissolving 12 parts of Soda in 137 parts of water.

A Fluid Lubricant

suitable for various parts of machinery is made by mixing, at about 100° Fahr.,

2 parts Lard Oil.
1 ,, Palm Oil.
3 ,, Cotton Seed Oil.
2 ,, Crude Paraffin Oil.
3 ,, Petroleum.

An Axle Grease for Light Vehicles

is prepared by making a soap of Resin and Tallow, and diluting with Linseed Oil thus :—

Melt together equal parts of Common Resin (in powder) and Tallow free from rancidity, and then saponify the compound until homogeneous by pouring it into 1 part of Caustic Soda Lye of sufficient strength to quickly saponify the mass, then heat the whole from 10 to 15 minutes, and finally dilute with 1 or more parts Raw Linseed Oil ; mix well and let it cool.

A Cart Grease for Ordinary Use

is made by mixing together

10 parts Heavy Paraffin Oil.
10 ,, Resin Oil.
5 ,, Oleic Acid.

In this mixture dissolve 10 parts of Tallow separately, make a Caustic Lye by mixing 1½ parts of Quicklime with 1 part of Soda Lye of 40° Bc., and then stirring in the oily mixture, and continue stirring until complete saponification takes place.

Plumbago Lubricating Compound.

Plumbago mixed with Tallow gives a very good lubricating compound that is free from any oxidizing if the Tallow be rendered free from rancidity. The proportions are

1 part Plumbago.
4 ,, Tallow.

The Plumbago being stirred into the melted Tallow and well incorporated by passing it through a mixing mill. Add a few pounds per hundredweight of Camphor in powder to the hot compound.

Dubbing.

1 pound Russian Tallow.
6 ounces Bees Wax.
4 ,, Black Pitch.
3 pounds Common Castor Oil.
½ ,, Soft Paraffin.
½ ounce Oil of Citronella.

Melt all together in a saucepan, except the Citronella which add on cooling. Stir now and again.

Groundlaying Oil.

Ceramic Trades.

1 pint Linseed Oil.
1 ,, Dissolved Gum Mastic.
½ ounce Red Lead.
½ ,, Resin.

Boil together until thoroughly incorporated. In using mix with Venice Turpentine.

Oil suitable for use with Gold.

1¼ parts Canadian Balsam.
1¼ ,, Printer's Oil.
1 ,, Rectified Spirit of Tar.

Heat and incorporate.

Printer's Oil.

1 quart Linseed Oil.
1 pint Rape Oil.
2 ounces Canadian Balsam.

Printer's Oil.—CONTINUED.

1 ounce Oil of Pitch.
½ ,, Oil of Amber.
½ ,, Red Lead.

Boil together until incorporated.

Sewing Machine Oil.

Best.

9 ounces Pale Oil of Almonds.
3 ,, Rectified Benzoline.
1 ,, Foreign Oil of Lavender.

Mix and filter.

Sewing Machine Oil.

Cheap Quality.

3 ounces Petroleum.
48 drops Essential Oil of Almonds.
9 ounces Pale Nut Oil.

Mix and filter.

Refining Linseed Oil.

Put 236 gallons of Oil into a copper boiler, pour in 6 pounds of Oil of Vitriol and stir them together for three hours, then add 6 pounds Fuller's Earth well mixed with 14 pounds hot Lime, and stir for 3 hours (the Oil must be put in a copper vessel with an equal quantity of water). Now boil it for three hours, then extinguish the fire. When cold draw off the water. Let it stand to settle for a few weeks.

To Clarify and Prepare Linseed Oil for Varnish Making.

Heat in a copper vessel 50 gallons Baltic Oil to 280° Fahr., add 2½ pounds calcined White Vitriol and stir well together. Keep the Oil at the above temperature for half-an-hour, then draw the fire, and in 24 hours decant the clear Oil. It should stand for at least four weeks before using for Varnish making.

Wheel Grease.

Put 20 pounds of Quicklime into a vessel and pour over it enough water to cover well, stir occasionally for a day or two, and when the Lime has melted pass the liquid through a fine sieve, stir into the sifted liquid (thin paste it will be) 15 gallons Crude Resin Oil and let it stand a day. Pour off the clear water and add 20 gallons of Anthracene Grease Oils. Stir well and heat to 240 degs. Fahr. Continue stirring until thorough amalgamation is attained.

Grease for Wooden Axles.

Put 20 pounds of Quicklime in a vessel and treat as in the foregoing Recipe. Mix the sifted Lime Paste with 7½ gallons common Resin Oil and let it stand a day. Pour off the clear water and add 20 gallons of Coal Tar Grease Oil and 20 pounds Plumbago; heat the whole gently until a proper amalgamation takes place.

Staining, Dyeing, and Finishing Morocco Leather.

(Brown, Golden Yellow, Maroon, Almond Yellow, Crimson, etc.)

Until the Aniline Dye-colours were introduced, Leather could only be coloured in a very few shades and then not always bright and sparkling. The only bright colour obtainable in any way brilliant was Russian Red, the production of which was kept an inviolable secret by those who knew how to produce it. It was of a flaming Red Colour. With the introduction of Aniline Dyes, however, Leather could be coloured in as great a variety, if not always so brilliant, as any Textile ; but as these Aniline Dyes are not of an uniform chemical nature, some working best when used in an acid form, and others best in an alkaline one, the currier is often puzzled to know how to proceed to get a serviceable colour, and particularly to produce a certain shade. Practice alone can render the knowledge perfect, and even when the currier has made himself acquainted with

the behaviour of a certain Aniline Dye and knows how to produce a certain colour on, say Morocco Leather, he is again beset with a difficulty, because this precise dye and same formula will produce totally different results on Leather that has been subjected to a different tanning process, as Russian Leather for example.

Such chaotic behaviour of the Aniline Dyes makes the complication worse, and thence lies the difficulty of the currier in successfully manipulating Aniline Dyes in the colouring and staining of Leather.

With a view to helping him out of his difficulties, the following details will be of great assistance, and if followed carefully will enable him to manipulate any Aniline Dye Liquor to produce successful results after a few trials with a particular dye.

The difference between staining and dyeing Leather will be noticeable from the details given.

The Process of Staining Leather.

This process is most applicable to the use of Dye Liquors prepared with decoctions of the Dye-woods, a sufficient depth or intensity of coloration is effected by repeated application of the Dye Liquor, but colouring Leather by dyeing, *i.e.*, dipping it in the Dye Liquor, is best applicable for Aniline Colours, because a more even colouring is obtained, whereas if the Aniline Dye Liquors be laid on with a brush, it is not always easy to obtain a uniformity of Shade, because these Dyes have a very great affinity for organic substances like Leather, and immediately an Aniline Dye touches an organic

substance it colours it at once, and the depth of coloration is in proportion to the strength of the Dye-solution at the moment of contact. If you take a brushful of the Dye Liquor and paint it on the skin, that part of the Leather which the brush first touches will be of a deeper shade than those which the partially exhausted brush has passed. It is for this reason, if it be desired to stain Leather with Aniline Dyes, it is always best to work quickly and with repeated brushfuls of Liquor sufficient to float the surface of the skin all over before any one part has totally absorbed any of the Dye Liquor.

To Stain a Goat or Deerskin tanned for Morocco Leather.

The method of tanning for this kind of Leather is a Sumach one, and therefore this particular process of tanning renders the skin easy to be dyed or stained, as Sumach is a good mordant for Aniline Dyes. Before proceeding to use the Dyewood Liquors, cleanse the dye table of all grease and colouring matter, and brush it over with a decoction of Flax Seed (made by boiling Crushed Linseed in water and straining), this mucilage will cause a partial attachment of the skin to the surface of the table and so prevent it slipping away, and at the same time allow all dye stains to be thoroughly cleaned off by washing the table with hot water.

Have ready to hand several bowls of the Liquors required: for instance, one holding the mordanting fluid, another the Dye Liquor, a third containing the "striker," and a fourth clean cold water;

if possible running water should be used to clean off all superfluous Dye Liquor from the stained skin.

Next lay the skin flesh side on the table and the head towards the left hand, and moisten it with a sponge dipped in clean, cold, or warm water, then to ensure the moisture being evenly distributed, go over the skin with a glass slicker to press out all the superfluous matter.

The next step is to apply the mordant. This is a liquid which enables the Dye Liquor to more readily and evenly strike into the fibre of the skin and so produce an uniform shade of colour. The mordant also acts chemically, in some cases by producing a particular shade of colour. In some cases a mordant is not always required with Morocco Leather. Apply the mordant with a large hair-brush, and lay it on the skin all round the edges first, and then zig-zag across the middle and backbone part. After mordanting half-a-dozen skins and laying aside over a trestle to allow the mordant to penetrate, take up the skin first mordanted and wipe the top of the table clean, and lay the skin on as before, and then proceed to apply the Dye Liquor in precisely the same way as the mordant was applied. Give one coat of Dye Liquor to each of the mordanted skins, and then begin with No. 1 and give all a second coat, and repeat three or four times to each skin. If a "striker" is to be used, it should be next applied. A "striker" is a fluid, sometimes the mordanting one, which is laid on to the dyed skin so as to modify the hue produced by the Dye Liquor. It is called a "striker" because it

strikes or gives the particular tone of colour desired. It is sometimes also called a "topping agent."

Next proceed to swill off all superfluous Dye Liquor, either by brushing on a plentiful supply of cold water, or better still, swill off under a tap of running water, then slick off all superfluous fluid (if so ordered in the Recipe or formula employed for dyeing), and finally hang the skin in the drying loft. Never let the sun's rays strike the leather while drying, or it will be spoiled in colour.

The dyed skins are then ready for the finisher, who gives a gloss to the skin by some particular gloss or dressing. For Morocco Skins that have been stained with Dyewood Liquor, a gloss is prepared by boiling

21 ounces Curd Soap.
2½ ,, Pure Hogs' Lard.
3½ ,, Crystallized Carbonate of Soda

in as much water as will dissolve all of them, and then mix in 21 fluid ounces of a decoction of Flax Seed.

This quantity is sufficient to finish a gross of skins, and should be laid on lightly with a sponge, allowed to dry on, and when dry a slight rubbing with a piece of flannel may be given. After this glossing or finishing the skins with this preparation they are ready for the market.

If, however, the skins appear hard and stiff after they come out of the finisher's hands, he should soften them by laying them in damp pinewood sawdust with the grain sides towards each other, so that only the flesh side touches the sawdust, and then cork-board them.

Recipe for Staining Morocco Leather Brown.

Three Dye Liquors have to be prepared for the production of the particular colour desired. These have to be combined in the proportions stated, put

20 parts (by weight) Soft Water,
8 ,, Fustic Extract

into a copper boiling vessel and boil for about ten minutes, calling this compound No. 1. Take

20 parts (by weight) Soft Water,
8 ,, Extract of Brazil Wood

and prepare exactly the same as No 1, and call it No. 2. Next prepare the No. 3 compound thus :— Put 20 parts (by weight) of Soft Water into a copper vessel, with 7 parts (by weight) of Extract of Logwood, add 1 part of Stale Urine, and boil the whole for ten minutes, then add 12 grains Carbonate of Soda and 24 grains of Potash per gallon of water originally taken, and continue to boil the compound for another 5 minutes. No mordant is required for this formula, but a "striker" is needed. This is prepared by dissolving 12 ounces of Alum in 10 gallons of Soft Water.

To prepare the Dye Liquors for use, mix them in the following proportions :

No. 1. 64 parts Fustic Liquor.
No. 2. 20 ,, Brazil Wood Liquor.
No. 3. 3 ,, Logwood Liquor,

and proceed to stain the skin by brushing the liquor on as already described. Immediately after apply-

ing this Dye Liquor to each skin give a couple of brushfuls of the "striker" before taking the next one in hand.

For a Yellow Stain.

Digest 1 part Gamboge and 2 parts Turmeric in 52 parts Methylated Spirit of Wine of medium strength (80° to 90°), and when dissolved filter the liquid and use this tincture as the staining fluid, first mordanting the liquid by brushing it over with a solution of Carbonate of Potash (1 ounce per gallon of water), and then, after applying the staining fluid, hanging up to dry and finishing as desired.

Dyeing Morocco Leather with Aniline Colours.

This is a much easier process than staining, and much better results are obtained when the operation is performed by a skilful dyer.

Owing to the avidity with which Aniline Dyes stain the fibre of Leather, it is best to work with two or three dye baths of varying degrees of strength, because if one of full strength is used for the first bath the resultant colour will exhibit a bronze hue which is not removable, and which spoils the whole effect, but by dipping the skin first in a weak solution and then into a stronger one, and finally into a Dye Liquor of full strength, a much more uniform colour and greater brilliancy are obtained.

As a general mordant for Morocco Leather which has been dyed with Aniline Colours use Tannic Acid (8 ounces Acid to from 4 to 5 quarts of

water) or one of Sumach Liquor of the same strength, while for Alkaline Dyes a solution of either Sulphate or Phosphate of Soda, 1 part to 100 of water.

In dyeing Morocco Skins, two Skins of nearly the same size are sewn together round the edges, with the flesh sides inward, and the skins thus sewn together are placed or dipped into the dye bath. By this method economy of dye liquor is effected. There is no need to dye the flesh sides of the skins, which absorb a great deal of the liquor to no purpose, and the skins also look better when dyed only on one side Of course it is impossible to prevent some liquor getting on the flesh sides, but this partial coloration is a distinct characteristic of Dyed Morocco Leather.

After applying the mordant and allowing each skin to partly absorb same, throw it over a pole while mordanting half-a-dozen or so of pairs of skins. Too much mordant should not be in the skins, and to ascertain if this is so press them on the grain side with the thumb nail, if water exudes under the pressure the skin should be slightly slicked to press out the superfluous mordanting liquid ; but if, under the pressure of the nail the part of the skin pressed shows up lighter than the other part, then the skin has been sufficiently mordanted. The next step is to proceed with the dyeing thus :—First dip a pair of skins in the weakest solution of Dye Liquor and work about until uniformly coloured, then lift out and enter into the second dye bath (medium strength), and after working them therein for a few minutes, pass them into the third or full strength dye bath, and work about until dyed to the shade desired.

All Aniline Dyed Colours dry out lighter than when wet, so when taken out of the final dye bath the colour should be deeper than it is intended to be when dry. The skins should be lifted out immediately this is obtained, as, if they are allowed to remain too long in the Dye Liquor, it will turn bronze, even to partial blackness.

After lifting out the skins from the dye bath, swill off all superfluous dye by either dipping in a large vat of clean water or pouring clean water over the skins, and hang them out to dry as already described for Stained Leather.

For the next pair of skins, first put them into the second (medium strength) dye bath used for the first pair, then into No. 3 bath, and finally prepare a fresh bath of full strength and put them into it. By this method economically use up all the strength of each dye bath. For a fourth pair of skins, proceed as before.

Previously to dyeing a complete skin, put a small piece of skin through the several processes to make sure that all is in right order. Use the dye bath warm, and keep at uniform temperature, 80° to 90° Fahr., all through time of dyeing.

To finish the Dyed Skins.

Soften them in damp Pinewood sawdust as already described, and then proceed to board them with a cork armboard, and finally apply the "finishing gloss" as described on a previous page. Each leather dresser generally has his own pet secret as to the preparation of this article, but one of the best finishes to use for Aniline Dyed Morocco Skins is prepared as follows :—

Put some new milk in a stoneware jar, and stand it on the top of a fire-grate or hot plate, or before a fire so that the heat shall curdle the milk (this will take several hours to accomplish). Then strain off the whey from the curds, and wash them with hot water until the water betrays scarcely any trace of milk, and is neither acid nor alkaline. This is ascertained by dipping a piece of blue or red tissue paper, and if the colour of neither of these strips is changed, the curds have been thoroughly washed. Dissolve the curds in Liquid Ammonia, and stir the mixture until of the consistency of cream; this is the finish desired. Lay it on the dyed leather (grain side) by means of a sponge, and hang up to dry, and they are ready for market. If at all stiff after drying, they may be softened by slicking or by putting the skin under the glazing machine a few times, but hand slicking is the best, as the machine is liable to efface the grain, which is a distinctive feature of morocco.

To Dye Morocco a Golden Yellow.

Use as a mordant Phosphate of Soda Solution, and for the Dye Liquor, Methanil Yellow dissolved in boiling water, in proportions of 1 part dye to 100 parts of water.

To Dye Morocco a Crimson.

Dissolve 1 ounce of Borax in 10 gallons of water, and mordant the liquor with this solution. To mordant the pairs of skins dip them in the solution for a second or two, and keep the remainder of

the mordant solution for a dye bath after having mordanted all the skins thus :—

Dissolve 1½ ounces of Ozobenzole Fast Crimson in 1 gallon of boiling water, and when dissolved put in 1 quart of this liquid into the Borax Solution ; put in half-a-dozen skins and work them about for 10 minutes, and then lift them out and add remainder of Dye Liquor, and re-enter the skins and dye to shade required.

Staining Calf and Kip Brown for Boot Uppers.

Since the introduction of Brown Leather for boots and shoes, tons of this coloured leather have been sold, and the secret of colouring same is much sought after by curriers and leather manufacturers. The following Recipes give excellent results :—

First moisten the Leather with a solution of Bichromate of Potash, and then, before the Skin is dry, apply the Dye Liquor, and finally, if it dries out too red a hue, tone down the colour by a single application of the mordanting fluid.

To prepare the Mordant.

Put some Crystals of Bichromate of Potash into 1 pint of cold water, and let it stand for 1 hour, shaking frequently, then pour off the liquid from the undissolved crystals, and dilute the liquid with warm water until it is of a pale straw yellow.

To prepare the Dye Liquor, dissolve Bismarck Brown in boiling hot water, in proportions of 1 ounce

to 1 gallon of water, and allow the fluid to digest for 1 hour, and then strain off the clear liquid from the tarry matter. Use the Dye Liquor of this strength, laying it on with a brush as described in staining leather.

Various shades of Brown can be obtained by varying the Bichromate of Potash solution, but too much of this should not be used or the leather will become harsh and crack on the grain side when boarding. Dry the stained skin in the shade, and soften it by damping in sawdust, and finally soften by boarding.

For a Chocolate Brown Colour, tone down the redness of the stained leather with a weak solution of Green Copperas in water (½ to 1 oz. per gallon).

To Stain Calfskins Almond Yellow.

First well mordant the leather in the Alum Mordant, and finally give repeated applications of Phosphine Solution (1 ounce of Phosphine dissolved in 1 pint Methylated Spirit and diluted with 1 gallon of water), until the desired tone of yellow is obtained.

The results may be modified by "topping" the leather with a solution of Bichromate of Potash.

The Process of Preparing Russian Leather.

This celebrated brand of Leather owes its name to the country of its origin and the peculiar odour of the Leather.

The impregnation of this odour was for a long time kept a secret by the Russian curriers, but it is not now, and Russian Leather is made in many countries besides that of its origin.

The skins used for its production are goats, large sheep, calfskins, and cow or steer hides, and the preliminary operations of soaking, unhairing, and fleshing are done in the usual manner, and then the hides are permitted to swell in a mixture of rye-flour, oat-flour, yeast, and salt. This compound is made into a paste with water, and is then thinned with sufficient water to steep a hundred hides in the mixture. The proportions of ingredients used for this mixture are, Rye Flour 22 pounds, Oat Flour 10 pounds, a little Salt, and just sufficient Yeast to set up fermentation.

The hides are steeped in this compound for two days, until swelled up, and then put into a solution of willow and poplar barks, in which they are allowed to remain eight days, being frequently turned about. The tanning process is then completed by putting them into a tanning liquor composed of pine and willow barks, equal parts. They are steeped eight days in this liquor, and then a fresh liquor of the same ingredients and proportions is made up, the hides are hardened and split, and then steeped in the freshly made liquor for another eight days, when they are sufficiently tanned.

The hides are then cut down the middle from head to tail into sides, and scoured, rinsed, and dried by dripping, and then passed on to the currier, who slightly dampens the dry sides and puts them in a heap or folds them together for a couple of days

to temper, and then impregnates them with a compound consisting of two-thirds Birch Oil, and one-third Seal Oil, this is applied on the flesh side for light Leather and on the grain side also for heavy Leather. The Leather is then "set out," "whitened," and well boarded and dried before dyeing.

A decoction of Sandal Wood alone or mixed with Cochineal is used for producing the Russian Red Colour, and this Dye Liquor is applied several times, allowing each application to dry before applying a following one. A brush is used, and the Dye Liquor spread on the grain side. A solution of Chloride of Tin is used in Russia as a mordant for the Leather before laying on the dye.

The Dye Liquor is prepared by boiling 18 ounces of Sandal Wood in 13 pints of water for one hour, and then filtering the liquid and dissolving in the filtered fluid 1 ounce of Prepared Tartar and Soda, which is then given an hour's boiling and set aside for a few days before use.

After dyeing the Leather is again impregnated with the mixture of Birch and Seal Oils applied to the grain side on a piece of flannel and, when the dyed Leather has dried, a thin smear of Gum Dragon Mucilage is given to the dyed side to protect the colour from fading, while the flesh side is smeared with Bark Tan Juice, and the dyed Leather then grained for market.

Preparing Patent and Enamelled Leather.

Patent Leather for boots and shoes is prepared from sealskins, and Enamelled Leather for harness from heavy bullocks' hides. The process of tanning

being what is called "union tannage" (a mixture of Oak and Hemlock Barks). These tanned skins are subjected to the process of soaking, unhairing, liming, &c., and are then subjected to the tanning process.

When about one-third tanned a buffing is taken off (we refer to the heavy hides), and is then split into three layers, the top, or grain side, being reserved for enamelling in fancy colours for use on tops of carriages, and the middle layer is finished for splatter boards and carriage trimmings, and some parts of harness ; the underneath layer, or flesh side is used for shoe uppers and other purposes. The tanning of the splits is then completed by subjecting them to a Gambier Liquor instead of a Bark Liquor.

When the splits are fully tanned they are laid on a table and scoured, and then stretched in frames and dried, after which each one is covered on one side with the following compound, so as to close the pores of the Leather that it may present a suitable surface for receiving the Varnish. Into 14 parts of Raw Linseed Oil put 1 part Dry White Lead and 1 part Silver Litharge, and boil, stirring constantly until the compound is thick, and dries in 15 or 20 minutes, when spread on a sheet of iron or china, into a tough, elastic mass, like caoutchouc ; this compound is laid on one side of the Leather while it is still stretched in the frame.

If for Enamelled Leather (*i.e.*, not the best patent), Chalk or Yellow Ochre may be mixed in the above compound while boiling, or afterwards, but before spreading it on the Leather.

The frames are then put into a rack in a drying closet, and the coated Leather dried by steam heat at 80° to 160° Fahr., the heat being raised gradually.

After removal from the drying closet, the grounding coat previously laid on is pumiced, to smooth out the surface, and then given two or three coats of the Enamelling Varnish, which consists of Prussian Blue and Lamp Black boiled with Linseed Oil and diluted with Turpentine, so as to enable it to flow evenly over the surface of the coated Leather. When spread on with a brush each coating of the Enamel is dried before applying the next, and pumiced or rubbed with Tripoli Powder on a piece of flannel (the coat last laid on is not subjected to this rubbing), when the Leather is ready for market.

To prepare the Enamelling Composition boil 1 part Asphaltum with 20 parts Raw Linseed Oil until thoroughly combined, then add 10 parts thick Copal Varnish, and when this mixture is homogeneous dilute with 20 parts Spirit of Turpentine.

Instead of the foregoing Enamelling Varnish the following is used for superior articles :—

18	ounces	Prussian Blue.
4	,,	Vegetable Black.
160	,,	(fluid) Raw Linseed Oil.

Boil together as previously directed and dilute with Turpentine as occasion requires. These Enamelling Varnishes should be made and kept several weeks in the same room as the varnishing is carried on, so that it is always subjected to the same temperature.

Black Stain.

1 gallon Vinegar.
14 ounces Ivory Black.
6 pounds Ground Iron Scales.

Mix well and allow to stand a few days.

Red Stain.

1 quart Water.
1 ,, Spirit of Hartshorn.
¼ pound Cochineal.

Heat the water to near boiling point, then dissolve the Cochineal therein, afterwards adding the Hartshorn Spirit. Stir well to incorporate.

Blue Black.

2 gallons Ale Droppings.
½ pound Bruised Galls.
¼ ,, Extract of Logwood.
2 ounces Extract of Indigo.
3½ ,, Sulphate of Iron.

Heat together and strain.

Finisher's Ink.

1 gallon Soft Water.
1¼ ounces Logwood Extract.
2½ ,, Green Vitriol.
½ ,, Bichromate Potash.
½ ,, Gum Arabic.

Grind to powder the Gum and Potash, and then add all the colouring ingredients to the water and boil.

Black Polish.

1 pound Charcoal.
¾ ,, Treacle.
3 ounces Sweet Oil.

Mix well until uniformity is obtained, then add

½ pint Vinegar.
½ ,, Ale Droppings.

Harness Polish.

1 pint Vinegar.
¼ pound Glue.
¼ ,, Logwood Extract.
2 ounces Soft Soap.
½ ,, Indigo.

Heat gently over slow fire, stirring constantly, then strain.

Liquid Cochineal Stain.

2½ drachms Good French Carmine.
½ ounce Solution of Potash.
2 ,, Rectified Spirit of Wine.
4 ,, Pure Glycerine.
Distilled Water to make 1 pint.

To Carmine in a 20 ounce bottle add 14 ounces Distilled Water, then gradually introduce Solution of Potash, shaking now and again until dissolved. Add Glycerine and Spirit of Wine, making up to 20 ounces with Distilled Water, and filter.

Cement for Joining Leather.

Soak for one day 1 pound of Common Glue in enough water to cover, and 1 pound of Isinglass in Ale Droppings, then mix together and heat gently until boiling; at this point add a little pure Tannin and keep boiling for half-an-hour. If the Glue and Isinglass when mixed be too thick, add water. This Cement should be used warm, and the jointed leather pressed tightly together for 12 hours.

Starch Gloss, Baking, Egg, and Custard Powders, Pickles, Spices, Relishes, etc.

Starch Gloss and Stiffener.

No. 1.

1½	ounces	Powdered	Spermaceti.
¾	,,	,,	Gum Arabic.
2	,,	,,	White Starch.
1	,,	,,	Borax.

Powder Spermaceti finely by aid of a little Spirit of Wine, add powdered Starch and powdered Gum, pass through a sieve and mix thoroughly with the Powdered Borax.

Directions for Use.

A teaspoonful to be added to each ¼ pound of Starch used, either hot or cold.

No. 2.

30	ounces	Distilled Soft Water.
5	,,	Pure Glycerine.
2	,,	Gum Arabic.
2	,,	Spermaceti.
3½	,,	Borax Powder.

Blancmange Powder.

6 ounces Powdered Natal Arrowroot.
6 ,, Best Corn Flour.
3 drachms Powdered Gum Arabic.
20 drops Essential Oil of Almonds.
10 ,, Essential Oil of Nutmeg.

Mix Powders in a mortar, rub in the Oils and pass through a sieve ; divide into six packets.

Directions for Use (on each packet).

Out of a pint of new milk take 4 tablespoonfuls and mix the contents of the packet into a smooth paste. Boil remainder of milk with 2 or 3 ounces of Loaf Sugar, add above to it and boil for 5 minutes, stir well then pour into a mould.

Currie Powder.

6 ounces Best Ground Turmeric.
4 ,, ,, ,, Corianders.
4 ,, ,, ,, Carraway Seeds.
2 ,, ,, ,, Cumin Seeds.
1½ ,, ,, ,, Jamaica Ginger.
1½ ,, Ground Black Pepper.
¾ ,, Cayenne Pepper.
¼ ,, Cardamom Seeds.

Dry all the ingredients *a little* and mix intimately.

Baking Powder.

No. 1.

5 ounces Powdered Tartaric Acid.
15 ,, ,, Cream of Tartar.
20 ,, ,, Carbonate of Soda.
40 ,, ,, Rice.

Dry all the ingredients separately in an oven, mix and pass through a fine sieve.

No. 2.

14 ounces Cream of Tartar.
4 ,, Wheat Flour.
1 ,, Magnesia.
3 ,, Carbonate of Soda.

No. 3.

½ pound Tartaric Acid.
½ ,, Carbonate of Soda.
½ ,, Arrowroot.

No. 4.

48 pounds Ground Rice.
8 ,, Magnesia.
8 ,, Farina.
24 ,, Carbonate of Soda.
24 ,, Tartaric Acid.

No. 5.

50 pounds Ground Rice.
14 ,, Magnesia.
12 ,, Farina.
29 ,, Carbonate of Soda.
8 ,, Tartaric Acid.

Egg Powder.

8 ounces Powdered Bicarbonate of Soda.
3 ,, ,, Tartaric Acid.
5 ,, ,, Cream of Tartar.
3 drachms Turmeric.
16 ounces Ground Rice.

Mix and pass through a fine sieve.

One teaspoonful to a dessert spoonful (according to article to be made) to be well mixed with each ½ pound of Flour. Two teaspoonfuls equal one medium-sized egg.

Custard Powder.

No. 1.

8 ounces Natal Arrowroot.
7 ,, Best Corn Flour.
10 grains Powdered Hay Saffron.
24 drops Essential Oil of Almonds.
12 ,, Essential Oil of Nutmeg.

Mix Powders in a mortar, gradually add Oils and pass through a fine sieve.

No. 2.

8 ounces Natal Arrowroot.
8 ,, Rice Powder.
1¼ ,, Gum Tragacanth.
2½ drachms Powdered Turmeric.
25 drops Oil of Almonds.
25 ,, Oil of Lemon.
25 ,, Oil of Nutmeg.

Lincolnshire Relish.

2	ounces	Garlic.
2	,,	Jamaica Ginger.
3	,,	Black Peppercorns.
¾	,,	Cayenne Pepper.
¼	,,	Ossein.
¾	,,	Nutmeg.
2	,,	Salt.
1½	pints	India Soy.

Enough Malt Vinegar to make 1 gallon.

Bruise Spices, Garlic, &c., and simmer in ½ a gallon of Vinegar for 20 minutes, strain and add Soy and sufficient Vinegar to make 1 gallon, then boil for five minutes. Keep in bulk as long as possible.

The Epicures' Sauce.

8	ounces	Tamarinds.
12	,,	Sultana Raisins.
2	,,	Garlic.
4	,,	Eschalots.
4	,,	Horse Radish Root.
2	,,	Black Pepper.
½	,,	Chilli Pods.
3	,,	Raw Jamaiça Ginger.
1½	pounds	Golden Syrup.
1	,,	Burnt Sugar (Caramel).
1	ounce	Powdered Cloves.
1	pint	India Soy.
1	gallon	Malt Vinegar.

Bruise Roots, Spices, &c., and boil in Vinegar for 15 minutes, then strain. To the strained liquor add Golden Syrup, Soy, and Burnt Sugar, then simmer for 10 minutes.

Piccalilli Sauce.

1 drachm Chilli Pods.
1½ ounces Black Peppercorns.
½ ,, Pimento.
¾ ,, Garlic.
½ gallon Malt Vinegar.

Bruise Spices and Garlic, boil in the Vinegar 10 minutes and strain.

1 ounce Ground Jamaica Ginger.
1 ,, Turmeric.
2 ,, Flower of Mustard.
2 ,, Powdered Natal Arrowroot.
8 ,, Strong Acetic Acid.

Rub Powders in a mortar with Acetic Acid and add to above, then boil for five minutes, or until it thickens.

Digestive Relish.

2 ounces Jamaica Ginger.
2 ,, Black Peppercorns.
1 ounce Mustard Seed.
1 ,, Coriander Fruit (Seed).
1 ,, Pimento (Allspice).
½ ,, Mace.
½ ,, Cloves.
½ ,, Nutmegs.
½ ,, Chilli Pods.
3 drachms Cardamom Seeds.
4 ounces Garlic.
4 ,, Eschalots.
4 pints Malt Vinegar.

Bruise Spices, Garlic, &c., and boil in Vinegar for 15 minutes, and strain. To this add

2½ pints Mushroom Ketchup.
1½ ,, India Soy.

Again simmer for 15 minutes and strain through muslin.

No. 2.

1 pound Soy.
50 ounces Best Vinegar.
4 ,, Ketchup.
4 ,, Garlic.
4 ,, Eschalots.
4 ,, Capsicum.
½ ,, Cloves.
½ ,, Mace.
¼ ,, Cinnamon.
1 drachm Cardamom Seeds.

Boil well and strain.

Pickling Spice.

10 pounds small Jamaica Ginger.
2½ ,, Black Peppercorns.
1½ ,, White ,,
1½ ,, Allspice.
¾ ,, Long Pepper.
1¼ ,, Mustard Seed.
½ ,, Chilli Pods.

Cut up Ginger and Long Pepper into small pieces, and mix all the other ingredients intimately.

One ounce to each pint of Boiling Vinegar is sufficient, but it may be made stronger if desired hot.

Essence of Savoury Spices.

2½	ounces	Black Peppercorns.
1	,,	Pimento.
¾	,,	Nutmeg.
½	,,	Mace.
½	,,	Cloves.
¼	,,	Cinnamon Bark.
¼	,,	Carraway Seeds.
20	grains	Cayenne Pepper.
15	ounces	Spirit of Wine.
5	,,	Distilled Water.

Bruise all the Spices, and having mixed Spirit and Water, digest in mixture 14 days, shaking frequently, then filter.

Flavouring Spice.

5	ounces	Powdered	Cinnamon Bark.
2½	,,	,,	Cloves.
2½	,,	,,	Nutmegs.
1¼	,,	,,	Carraway Seeds.
1¼	,,	,,	Coriander ,,
1	,,	,,	Jamaica Ginger.
½	,,	,,	Allspice.

Let all be dry and in fine powder. Mix and pass through a sieve.

Cattle Spice.

16	pounds	Ground	Locust Beans.
2¼	,,	,,	Fenugreek.
½	,,	,,	Aniseeds.
¼	,,	,,	Corianders.

Cattle Spice.—CONTINUED.

¼ pound Ground Carraway.
½ ,, ,, Gentian Root.
¼ ,, ,, Ginger.

Mix well and pass through a sieve.

Coffee Essence.

4 pounds Best Ground Mocha Coffee.
2 ,, ,, ,, Chicory.

Boil with two gallons of water in a closed vessel and when cold, strain, press, and make up to two gallons, and to this add

8 ounces Rectified Spirit of Wine
16 ,, Pure Glycerine (fluid).

Simple Syrup enough to make four gallons, and mix intimately.

Simple Syrup.

10 pounds Loaf Sugar.
2 quarts Water.

Melt by heat to 212° Fahr. and strain if necessary.

Directions for using Coffee Essence.

About a tablespoonful to a coffeecup full of boiling water and a little boiled milk makes a cup of delicious coffee in a minute.

Aromatic Vinegar.

16 ounces Glacial Acetic Acid.
40 drops Oil of Cloves.
40 ,, Oil of Rosemary.
40 ,, Oil of Bergamot.
16 ,, Oil of Neroli.
30 ,, Oil of Lavender.
1 drachm Benzoic Acid.
½ ounce Camphor.
30 or 40 drops Compound Tincture of Lavender.
3 ounces Spirit of Wine.

Dissolve Oils, Benzoic Acid, and Camphor in the Spirit of Wine, mix with Acetic Acid and shake until bright, lastly adding Tincture of Lavender to colour to please.

The Perfect Food for Infants.

1½ pounds best Wheaten Flour.
¾ ,, Fine Oatmeal.
6 ounces Lentil Flour.
6 ,, Powdered Sugar of Milk.

Mix well, pass through a sieve, place in a large dish, and bake in a slow oven for two hours. When cold again, pass through sieve and pack in tins or air tight packets.

Directions.—Mix one tablespoonful of the Perfect Food into a paste with water, then add half a pint of boiling milk (or milk and water, according to age of child), and boil for a few minutes. If not sweet enough, add sugar to taste.

Disinfectants.

Various methods of preparing Disinfectants and Deodorisers are now so generally known that there is no need to occupy much space on these subjects. For disinfecting rooms, some prefer to boil two to three pounds of Soft Soap in four gallons Soft Water, and add about a pint of Carbolic Acid. Others use a solution of Permanganate of Potash, whilst in some cases Chloride of Lime, Chloride of Soda, or Sulphate of Zinc are the chief Agents employed.

The Disinfecting Powder of one famous maker which for many years has been to the front, is said to consist of

100 parts Sulphate of Iron.
50 ,, ,, of Zinc.
40 ,, Oak Bark Powder.
5 ,, Tar.
5 ,, Oil.

Another.

Mix together Chloride of Lime and Burnt Umber, add water and set on plates.

Pink Carbolized Sanitary Powder.

6	ounces	Powdered Alum.
5	pounds	,, Green Copperas.
5	,,	,, Red Lead.
12½	,,	Calvert's No. 5 Carbolic Acid.
1½	,,	Spirit of Turpentine.
10	,,	Calais Sand.
60	,,	Slaked Lime.

Mix Carbolic Acid with Turpentine and Sand, then add the other ingredients, lastly, the Slaked Lime, and after mixing, pass through a sieve.

It is advisable to use Lime that has been slaked some time.

Blue Sanitary Powder.

2	pounds	Powdered Alum.
12	ounces	Oil of Eucalyptus.
6	,,	Rectified Spirit of Tar.
2	,,	,, ,, Turpentine.
¾	,,	Ultramarine Blue (common).
14	pounds	Common Salt.

Mix Alum with about 3 pounds of Salt in a large mortar, gradually add Oil of Eucalyptus and Spirits, now put in the Ultramarine Blue, and lastly remaining salt, mixing all well, and pass through sieve.

Extracts, Essences, Scents,
Pomades, Powders, Hair Lotions, etc.

TO MAKE SIMPLE EXTRACTS.

Orris Extract.

3½ pounds Orris Root (cut small and bruised).
4 pints Rectified Spirit of Wine.

Percolate several times and lastly filter.

Tonquin Extract.

2 ounces Tonquin Beans (sliced).
1 pint Rectified Spirit of Wine.

Let it stand 28 days, shake frequently, and filter.

Geranium Extract.

¼ ounce Oil of Rose Geranium (Turkish).
10 ,, Rectified Spirit of Wine.

Mix.

Essence or Extract of Neroli.

80 drops Best Oil of Neroli.
10 ounces Rectified Spirit of Wine.

Mix.

Essence or Extract of Vanilla.

2 ounces Vanilla Beans (cut small).
1 pint Rectified Spirit of Wine.

Macerate one month and filter.

Storax Extract.

1 ounce Storax.
1 pint Rectified Spirit of Wine.

Digest seven days, shake frequently and filter.

Tolu Extract.

1 ounce Balsam of Tolu.
1 pint Rectified Spirit of Wine.

Digest four days, shaking now and again, then filter.

Civet Extract.

1 drachm Civet.
1 pint Rectified Spirit of Wine.

Rub down Civet in a mortar with a little Sugar, mix with Spirit of Wine, shake frequently and, after 28 days, filter.

Albert Edward Bouquet.

10 ounces Essence of Jockey Club.
10 ,, ,, of Bouquet.
3 ,, ,, of Heliotrope.

Mix.

Essence Bouquet.

10 ounces Extract of Rose.
10 ,, ,, of Cassia.
8 ,, ,, of Orris.
2 ,, ,, of Vanilla.
½ ,, Essential Oil of Bergamot.
½ ,, ,, ,, of Lemon.
½ ,, Extract of Civet.
40 drops Otto of Rose.

Mix.

Verbena Essence.

3 drachms Oil of Verbena.
1 ,, Essential Oil of Bergamot.
18 ounces Rectified Spirit of Wine.
2 ,, Distilled Water.

Mix and filter through Magnesia.

Heliotrope.

6 ounces Extract of Vanilla.
10 ,, ,, of Rose.
5 ,, ,, of Orange.
5 ,, ,, of Cassia.
1 ,, ,, of Musk.
7 drops Essential Oil of Almonds.
10 ,, Otto of Rose.

Mix.

Essence Jonquille.

20 ounces Extract of Jasmine.
10 ,, ,, of Orange.
20 ,, ,, of Tuberose.
2½ ,, ,, of Vanilla.
16 drops Otto of Rose.

Frangipanni.

10 ounces Extract of Rose.
10 ,, ,, of Cassia.
6 ,, ,, of Orange.
6 ,, ,, of Orris.
2½ ,, ,, of Tonquin.
2½ ,, ,, of Vanilla.
½ ,, ,, of Musk.
½ ,, ,, of Civet.
36 drops Best Oil of Neroli.
40 ,, ,, ,, of Geranium.
30 ,, Oil of Bergamot.
5 ,, ,, of Sandalwood.
20 ,, Otto of Rose.

Mix.

Guards' Bouquet.

12 ounces Extract of Neroli.
6 ,, ,, of Musk.
20 ,, ,, of Rose.
20 ,, ,, of Cassia.
10 ,, ,, of Orange.
12 ,, ,, of Vanilla.
12 ,, ,, of Orris Root.
40 drops Oil of Cloves.

Guards' Bouquet.—CONTINUED.

60 drops Oil of Bergamot.
30 ,, Otto of Rose.

Mix.

Millefleurs.

10 ounces Extract of Rose.
10 ,, ,, of Cassia.
10 ,, ,, of Orange.
4 ,, ,, of Orris Root.
4 ,, ,, of Vanilla.
1 ,, ,, of Musk.
½ ,, ,, of Civet.
4 drops Essential Oil of Almonds.
8 ,, Oil of Neroli.
20 ,, ,, of Citron.
30 ,, ,, of Bergamot.
6 ,, ,, of Cloves.
6 ,, ,, of Patchouli.
20 ,, ,, of Rose Geranium.
20 ,, ,, of Lemon.
10 ,, ,, of Lavender (English).
3 ,, ,, of Citronella.
20 ,, ,, of Otto of Rose.

Mix.

May Flowers.

20 ounces Extract of Vanilla.
10 ,, ,, of Rose.
10 ,, ,, of Jasmine.
10 ,, ,, of Orange.
10 ,, ,, of Cassia.
3 ,, ,, of Storax.
10 drops Essential Oil of Almonds.

Mix.

Myrtle Essence.

20 ounces Extract of Rose.
10 ,, ,, of Orange.
10 ,, ,, of Tuberose.
10 ,, ,, of Vanilla.
2½ ,, ,, of Jasmine.
2 ,, ,, of Storax.

Mix.

Musk Essence.

150 grains Grain Musk.
20 ounces Rectified Spirit of Wine.

Macerate 14 days with occasional agitation, then filter, retaining Musk for next making. For cheaper quality, add Rose Water 4 ounces.

Moss Rose.

10 ounces Extract of Rose.
5 ,, Rose Triple.
5 ,, Extract of Orange.
4 ,, ,, Musk.

Mix.

New Mown Hay.

20 ounces Extract of Tonquin.
10 ,, ,, of Rose Triple.
10 ,, ,, of Geranium.
10 ,, ,, of Jasmine.
10 ,, ,, of Orange.
10 ,, ,, of Rose.
2 ,, ,, of Storax.

Mix.

Napoleon Bouquet.

20 ounces Extract of Rose.
20 ,, ,, of Violet.
10 ,, ,, of Tuberose.
5 ,, ,, of Orange.
1½ ,, ,, of Storax.
¼ ,, Essential Oil of Bergamot.
1 drachm Otto of Rose.

Opoponax.

¼ ounce Pod Musk.
2 ,, Vanilla Beans.
1 ,, Tonquin Beans.
5 pints Rectified Spirit of Wine.

Digest 28 days and add

20 ounces Extract of Orris.
10 ,, ,, of Rose.
10 ,, ,, of Jasmine.
10 ,, ,, of Cassia.
10 ,, ,, of Tuberose.
½ ,, Oil of Citron.
½ ,, ,, of Bergamot.
3 drachms Otto of Rose.
1 ,, Oil of Patchouli.

Add last four after filtering.

Patchouli Essence.

80 drops Oil of Patchouli.
10 ,, Otto of Rose.
1 pint Rectified Spirit of Wine.

Mix.

Rondeletia.

16 drops Otto of Rose.
60 ,, English Oil of Lavender.
30 ,, Essential Oil of Bergamot.
30 ,, Oil of Cloves.
8 grains Musk (in grain).
10 ounces Rectified Spirit of Wine.
2 ,, Extract of Vanilla.
2 ,, Rose Water.

Add the Rose Water after macerating 14 days, then filter.

Stephanotis.

20 ounces Essence of White Rose.
10 ,, Extract of Jasmine.
½ ,, ,, of Storax.

Mix.

Bloom of Roses.

¼ ounce Pure Carmine.
½ ,, Strong Liquid Ammonia.
20 ,, Rose Water.
½ ,, Rose Triple.

Place Carmine in a pint bottle, pouring over it the Liquid Ammonia, and shaking now and again for two days, then add Rose Water and Rose Triple and set aside for seven days, afterwards pour off the clear liquor for sale.

Hair Restorer.

3 drachms Pure Acetate of Lead.
9 ,, Milk of Sulphur.
2¼ ounces pure Glycerine.
1 ,, Tincture of Cantharides.
30 drops Essence Bergamot.
45 ounces Rose Water.

Rub Sulphur with Glycerine until smooth ; dissolve Acetate of Lead in 1 pint of Rose Water and add above to it, then having shaken Essence Bergamot with Tincture of Cantharides, add to previous compound, making up the product to 50 ounces with Rose Water.

Glycerine and Cantharides Lotion.

2 pints Rosemary Water.
2 ounces Liquid Ammonia.
3 ,, Tincture of Cantharides.
1 ,, Pure Glycerine.

Mix.

Rosemary Water.

30 drops Oil of Rosemary.
¼ ounce Rectified Spirit of Wine.
¼ ,, Light Magnesia.
2 pints Distilled Water.

Mix Oil with Spirit and rub with Magnesia in a mortar, then add Water and filter.

Athenian Water.

2 pints Rose Water.
5 ounces Rectified Spirit of Wine.
1 ,, Sassafras Wood.
¼ ,, Pearl Ash.

Boil Sassafras in the Rose Water and, when cold, add Pearl Ash and Spirit of Wine, then filter.

Wall Flowers.

20 ounces Extract of Cassia.
20 ,, ,, of Orange.
20 ,, ,, of Rose.
10 ,, ,, of Orris.
1 ,, ,, of Vanilla.
½ ,, ,, of Storax.
20 drops Essential Oil of Almonds.
40 ,, Otto of Rose.

Mix.

Magnolia.

20 ounces Extract of Orange.
40 ,, ,, of Rose.
10 ,, ,, of Tuberose.
10 ,, ,, of Violet.
12 drops Essential Oil of Almonds.
5 ,, Oil of Citron.
5 ,, Otto of Rose.
½ ounce Extract of Storax.

Mix.

Yellow Roses.

20 ounces Rose Triple.
20 ,, Extract of Tuberose.
2½ ,, ,, of Tonquin.
2½ ,, Essence of Verbena.
½ ,, Extract of Storax.

Mix.

Wild Rose.

8 ounces Extract of Cassia.
8 ,, ,, of Orange.
16 ,, ,, of Rose.
8 ,, Rose Triple.
20 drops Essential Oil of Lemon.
20 ,, Oil of Spearmint.

Tea Rose.

20 ounces Extract of Rose.
20 ,, ,, of Geranium.
5 ,, ,, of Orange.
20 ,, Rose Triple.
20 drops Oil of Sandal Wood.
5 ounces Extract of Violet.
1 ,, ,, of Storax.

Essence of Lilies.

30 ounces Extract of Tuberose.
15 ,, ,, of Cassia.
15 ,, ,, of Rose.
21 ,, ,, of Vanilla.

Essence of Lilies.—Continued.

8 ounces Extract of Orange.
4 ,, ,, of Jasmine.
½ ,, ,, of Civet.
10 drops Essential Oil of Almonds.
8 ,, Otto of Rose.
Mix.

Honeysuckle.

8 ounces Extract of Tuberose.
8 ,, ,, of Rose.
8 ,, ,, of Violet.
8 ,, ,, of Jasmine.
2 ,, ,, of Vanilla.
2 ,, ,, of Storax.
40 drops Essential Oil of Almonds.
20 ,, Oil of Neroli.
Mix.

Lilac Essence.

18 ounces Extract of Tuberose.
12 ,, ,, of Orange.
4 ,, ,, of Civet.
4 drops Essential Oil of Almonds.
Mix.

Florida Water.

7 pints Rectified Spirit of Wine.
2 ,, Rose Water.
1½ ounces Essential Oil of Lemon.
2 , English Oil of Lavender.
1 ,, Oil of Cloves.
½ ,, Oil of Lemongrass.
Mix.

Eau de Cologne.

No. 1.

60 drops Essential Oil of Bergamot.
60 ,, ,, ,, Lemon.
60 ,, Oil of Rosemary.
30 ,, ,, Lavender.
38 ,, ,, Neroli.
8 ,, ,, Citron.
16 ounces Rectified Spirit of Wine.
4 ,, Orange Flower Water.

Mix Oils with Spirit of Wine, gradually add Orange Flower Water, then filter.

No. 2.

¼ ounce Essential Oil of Lemon.
½ ,, ,, ,, Bergamot.
¼ ,, ,, ,, Rosemary.
1 drachm Oil of Neroli.
½ ,, Oil of Thyme.
3 ,, Essence of Millefleur.
¼ ounce Aromatic Spirit of Ammonia.
2½ ,, Spirit of Horse Radish.
Enough Rectified Spirit of Wine to make 40 ounces.

Mix. Let it stand in bulk for some time (the longer the more exquisite the blend), then filter.

Essence of Wood Violet.

30 ounces Extract of Cassia.
20 ,, ,, of Rose.
20 ,, ,, of Violet.
8 ,, ,, of Jasmine.

Essence of Wood Violet. —CONTINUED.

8 ounces Extract of Orris.
2 ,, ,, of Storax.
10 drops Essential Oil of Almonds.
20 ,, Otto of Rose.

Mix.

Ylangylang.

10 ounces Extract of Rose.
10 ,, ,, of Cassia.
10 ,, ,, of Jasmine.
4 ,, ,, of Tonquin.
5 ,, ,, of Vanilla.
½ ,, ,, of Musk.
½ ,, ,, of Civet.
60 drops Essential Oil of Bergamot.
60 ,, ,, ,, of Ylangylang.
30 ,, Otto of Rose.

Mix.

Spring Flowers.

10 ounces Extract of Rose.
10 ,, ,, of Violet.
1¼ ,, ,, of Cassia.
1¼ ,, Rose Triple.
1 drachm Essential Oil of Bergamot.
½ ,, Extract of Musk.
½ ,, ,, of Civet.

Mix.

White Rose.

5 ounces Extract of Rose.
4 ,, Rose Triple.
5 ,, Extract of Violet.
3½ ,, Jasmine.
1½ ,, Essence of Patchouli.

Mix.

West End Bouquet.

20 ounces Essence of White Rose.
10 ,, ,, of Wood Violet.

Mix.

Frangipanni Sachet.

8 ounces Powdered Starch.
8 ,, Precipitated Chalk.
1 ,, Orris Root.
60 drops Oil of Geranium.
2½ drachms Extract of Frangipanni.

Mix and pass through a fine sieve.

Essence Bouquet Sachet.

4 ounces Powdered Starch.
4 ,, Precipitated Chalk.
1½ ,, Orris Root.
30 drops Essential Oil of Bergamot.
¼ ounce Essence Bouquet.

Mix and pass through a sieve.

Violet Sachet.

8 ounces Powdered Starch.
4 ,, Precipitated Chalk.
6 ,, Orris Root.
¼ ,, Extract of Wood Violet.
6 drops Oil of Neroli.

Mix well and pass through a sieve.

Rose Sachet Powder.

1 pound Powdered Starch.
1 ,, Precipitated Chalk.
8 ounces Orris Root.
10 drops Otto of Rose.
20 ,, Oil of Rose Geranium.
1 drachm Extract of Civet.

Mix and pass through a sieve.

Aromatic Vinegar.

16 ounces Glacial Acetic Acid.
1 ,, Camphor.

Dissolve and add

60 drops Essential Oil of Bergamot.
60 ,, ,, ,, of Cloves.
40 ,, ,, ,, of Lemon.
40 ,, ,, ,, of Lavender.
20 ,, ,, ,, of Rosemary.
20 ,, ,, ,, of Cinnamon.

Sufficient quantity of Rectified Spirit of Wine.

Dissolve Oils in Spirit of Wine, and add to Acid, using a few stems of Saffron to colour.

Jockey Club Sachet.

¼ ounce Powdered Magnesia.
3 drachms Essence of Jockey Club.
60 drops Essence of Musk.
4 ounces Powdered Orris Root.
8 ,, ,, Starch.
8 ,, Precipitated Chalk.

Mix and pass through a sieve.

Hungary Water.

20 ounces Rectified Spirit of Wine.
¼ ,, Essential Oil of Rosemary.
1 drachm ,, ,, of Bergamot.
30 drops ,, ,, of Lemon.
1½ ounces Rose Triple.
5 ,, Rose Water. Mix.

Eau de Portugal.

2 pints Rectified Spirit of Wine.
¼ ounce Oil of Citron.
¼ ,, Essential Oil of Bergamot.
½ ,, ,, ,, of Orange.
6 drops Otto of Rose.
10 ounces Rose Water. Mix.

Eau de Botot.

9 ounces Extract of Cedar Wood.
2¼ ,, Tincture of Myrrh.
2½ ,, ,, of Rhatany.
20 drops Oil of Lavender.
30 ,, ,, of Peppermint.
10 ,, Otto of Rose. Mix.

Royal Hunt Bouquet.

20 ounces Extract of Rose.
5 ,, ,, of Neroli.
5 ,, ,, of Cassia.
5 ,, ,, of Orange.
2½ ,, Rose Triple.
5 ,, Extract of Orris.
5 ,, ,, of Tonquin.
2½ ,, ,, of Vanilla.
¼ ,, Oil of Citron.
1 ,, Essence of Musk.

Flowers of Erin.

20 ounces Essence of White Rose.
1 ,, ,, of Vanilla.

Mix.

Brilliantine.

4½ ounces Best Castor Oil.
4½ ,, Absolute Alcohol.
1½ ,, Essence of Jockey Club.
12 drops Otto of Rose.
1 drachm Tincture of Saffron.

Mix and, after standing a few days, filter.

Rose Toilet Vinegar.

4 ounces Rose Petals (dried).
10 ,, Rose Triple.
5 ,, Acetic Acid.
35 ,, Distilled Water.

Put all together and macerate in a closed vessel for 14 days, shaking frequently, then filter.

Balm of Gilead.

4 ounces Best Gum Benzoin.
16 ,, Canada Balsam.

Dissolve by heat, strain whilst hot, and to it add

¼ ounce Essential Oil of Rosemary.
¼ ,, ,, ,, of Lemon.
¼ ,, Oil of Cassia.

Mix intimately.

Lavender Water.

2½ ounces Best Foreign Oil of Lavender.
1 ,, Extract of Musk.
1 ,, Essence of Mareschale.
½ ,, Essential Oil of Bergamot.
10 drops Otto of Rose.
6 ounces Orange Flower Water.
32 ,, Rectified Spirit of Wine.

Mix.

Cherry Tooth Paste.

8 ounces Clarified Honey.
8 ,, Precipitated Chalk.
8 ,, Powdered Orris Root.
1 ,, Rose Pink.
30 drops { Oil of Cloves. ,, of Nutmeg. ,, of Rose Geranium.
Enough Simple Syrup.

Rub the Oils with the Powder and pass through a fine sieve, then mix into a paste with Honey and enough Syrup to make it soft.

Castor Oil Pomade.

1½ ounces Oil of Sweet Almonds.
1½ ,, Best Castor Oil.
½ ,, Spent Rose Pomade.
½ ,, ,, Orange ,,
½ ,, ,, Cassia ,,
½ ,, Essence of Lemon (Oil).
½ ,, ,, of Bergamot (Oil).
1 ,, (or sufficient) Palm Oil.

Cantharadine Pomade.

2 pounds Beef Marrow.
3¼ ounces White Wax.
1 drachm Oil of Mace.
1 ,, ,, of Cloves.
30 drops Otto of Rose or Oil of Geranium.
¼ ounce Tincture Cantharides.

Melt in Water, adding Tincture at last.

Quinine Pomade.

12 ounces Beef Marrow.
8 ,, Prepared Lard.
2 ,, Oil of Almonds (expressed)
1 drachm Balsam of Peru.
1 ,, Sulphate of Quinine.
¼ ounce Essential Oil of Cloves.
30 drops Otto of Rose.

Melt first three in a water bath, add Balsam Peru and Quinine, then perfume on cooling.

Circassian Cream.

1 pound Prepared Lard.
1 ,, Benzoated Lard.
½ ,, Spent Rose Pomade.
2 ,, Expressed Oil of Almonds.
1 drachm Essential Oil of Bergamot.
¼ ounce ,, ,, of Geranium.
½ ,, Alkanet Root.

Abstract colour from Alkanet Root by gentle heat with Oil of Almonds, strain perfectly, melt all together, adding the perfume lastly.

Cold Cream.

¼ ounce White Wax.
¾ ,, Spermaceti.
3 ,, Oil of Almonds.
4 ,, Rose Water.

Melt together and stir until cold.

Superior Cold Cream.

10 ounces Prepared Lard.
4 ,, Finest Castor Oil.
2 ,, Best English Spermaceti.

Melt in a water bath and stir in gradually, after being mixed and dissolved, the following :

¾ ounce Rose Water.
¾ ,, Elder Flower Water.
20 grains Powdered Borax.

Superior Cold Cream.—CONTINUED.

Add on cooling

20 drops Essence of Bergamot.
20 ,, ,, of Otto of Rose.

And beat well until cold.

Honey and Glycerine Jelly.

70 grains Russian Isinglass.
6 ounces Rose Water.

Dissolve in a water bath and add

4½ ounces Pure Glycerine (fluid).
1½ ,, Clarified Honey.
6 drops Otto of Rose.

Perle Powder.

16 ounces Powdered French Chalk.
1 ,, Oxide of Bismuth.
1 ,, Powdered Oxide of Zinc.

Mix and pass through a sieve.

Violet Powder.

12 pounds Powdered Starch.
2 ,, Orris Root.
½ ounce Essential Oil of Lemon.
½ ,, ,, ,, of Bergamot.
¼ ,, Extract of Civet.
1½ drachms Oil of Cloves.

Mix the Powders intimately, then having mixed Perfumes, add gradually, then pass twice through a sieve.

Cologne Vinegar.

1 ounce Strong Acetic Acid.
1 pint Eau de Cologne.

Mix.

Hair Lotion.

10 ounces Oil of Sweet Almonds.
10 ,, Liquor of Ammonia.
30 ,, Spirit of Rosemary.
30 ,, Honey Water.

Mix and make a Lotion. A small quantity to be sponged into the hair every morning.

Honey Water

is made as follows :—

10 drops Essential Oil of Bergamot.
10 ,, ,, ,, of Lemon.
5 ,, Oil of Neroli.
20 ounces Rectified Spirit of Wine.
10 ,, Rose Water.

Mix.

Glycerine and Cantharides Hair Wash.

¼ ounce Tincture of Cantharides.
¼ ,, Strong Liquid Ammonia.
¾ ,, Pure Glycerine.
20 ,, Oil of Rose Geranium.
18 ,, Rosemary Water.

Mix and make a Lotion. To be used night and morning, with a sponge.

Hair Restorer.

¼ ounce Tincture of Cantharides.
¼ ,, ,, of Galls.
20 drops Essence of Musk.
6 grains Carmine.
1 ounce Rectified Spirit of Wine.
5 ,, Rose Water.

Make a Lotion. To be rubbed on nightly.

Chinese Tooth Powder.

12 ounces Finest Powdered Pumice Stone.
3 ,, White Starch.
40 drops Oil of Peppermint.
10 grains Carmine.

Mix and pass through a fine sieve.

Rosemary Hair Wash.

50 grains Salt of Tartar.
2½ ounces Rose Triple.
9½ ,, Rosemary Water.

Make a Lotion.

Mouth Soap.

8 ounces Best White Soap.
8 ,, Powdered French Chalk.
8 ,, Orris Root.
4 ,, White Sugar.
4 ,, Rose Water.
60 drops Oil of Cloves.
¼ ounce ,, of Peppermint.

Cut up Soap and melt in water bath with Rose Water, rub Oils with Sugar, Orris, and Chalk, then add it to above, stirring until well mixed.

Astringent Extract of Roses and Rosemary.

1 pint Rosemary Water.
5 ounces Rose Triple.
5 ,, Rectified Spirit of Wine.
5 ,, Extract of Vanilla.

Mix and filter through Magnesia.

Liquid Blanc for Theatrical Use.

4 ounces Oxide of Bismuth.
10 ,, Rose Water.
10 ,, Orange Flower Water.

Mix by long trituration in a mortar.

Face Powder.

4 ounces Oxide of Bismuth.
16 ,, Powdered Starch.
10 drops Otto of Rose.

Mix intimately and pass through a sieve.

Rose Face Powder.

7 pounds Powdered Starch.
30 grains Rose Pink.
20 drops Essential Oil of Bergamot.
10 ,, Otto of Rose.
60 ,, Oil of Rose Geranium.

Mix well and pass through a sieve.

Bay Rhum.

90 drops Essential Oil of Bay Berries.
20 ,, ,, ,, of Pimento.
¼ ounce Acetic Ether.
¼ ,, Powdered Pumice Stone.
25 ounces Spirit of Wine (Rectified).
5 ,, Distilled Water.
10 ,, Jamaica Rum.

Mix Oils with Spirit of Wine, add Rum, Acetic Ether, and Distilled Water. Add Powdered Pumice Stone last, and filter through paper.

If preferred richer in odour, add 10 drops Oil of Absinthe.

PERFUMED POMADES.

White.

8 ounces Best White Wax.
4 ,, Tallow.
13 ,, Lard.

Melt together by gentle heat, and, on cooling, add

20 drops Oil of Bergamot.
10 ,, ,, of Lemon.
6 ,, ,, of Peru Balsam.
6 ,, ,, of Clove.

Stir well when perfumes are being added.

Black.

8 ounces Best Wax.
4 ,, Tallow.
13 ,, Lard.

Melt and colour with Bone Black, adding perfumes as before.

Brown.

Use the same ingredients except Bone Black, for which substitute Umber ; same Perfumes.

Red.

Melt Wax, Tallow, and Lard, and use Alkanet Root for colouring. Perfumes as before.

Fuel Briquettes.

The ingredients required for manufacturing these articles are a Coal Dust and any binding material easily procured. Clay can be used for binding a cheap article, but has the fault of caking in a hot fire, and rendering the ash extremely difficult to remove.

The process in general use now is to have steam jacketted pans, and to mix with the Coal Dust a certain proportion of Resin, Pitch, and Crude Naphtha, and after these articles have undergone a thorough mixing they are let out through a door at the bottom of the pan, and passed on to a press. In this machine they are pressed into blocks of a suitable size, and after leaving it they are ready for the market.

If Clay is used as a binding material it greatly improves the look of the product to finish it off with a coat of Crude Resin (done by melting the Resin and dipping the blocks into it).

There is very little skill required in the production of these goods, when once the proper proportions of the different ingredients are obtained.

Almost any resinous or tarry matter may be used in their manufacture. Seaweed boiled down in water may be very advantageously used by colliery owners whose works are situated near the coast. The weed on being boiled for some hours produces a glutinous mass, and acts as a good binding material; it should be mixed with the Coal Dust in the pan. Pine Sawdust, 7½ per cent. mixed with the Coal Dust before going into the pan, improves the quality of the Briquettes. Any kind of Sawdust may be used, but Pine is the best. The quantity of each binding material necessary can be best ascertained by experiment, and presents no difficulty.

Carbonated Drinks,
Essences, Cordials, etc.

Ginger Beer Powder.

9 drachms Cream of Tartar.
3 ,, Powdered Jamaica Ginger.
½ ounce Tartaric Acid.
16 drops Essence of Lemon.

Mix and pack in white paper, afterwards enclosing in Waterproof Paper.

Directions for Use.

Place the contents of this packet in a three-gallon cask or earthern vessel, pour over it half a gallon of boiling water ; stir well, and add 1 lb. of loaf sugar, and, when dissolved, add 1½ gallons of cold water ; stir in two or three tablespoonfuls of yeast, set it in a warm place for 12 hours, when a good head will rise. Pour off clear liquor and bottle.

Soluble Essence of Ginger.

1 pint Strongest Tincture of Ginger.
1½ ounces Fresh Slaked Lime.
¼ ,, Salt of Tartar.

First add Salt of Tartar to the Ginger, then in a quarter of an hour, at four different times, introduce the Slaked Lime, shaking well after each addition ; press through a filter, and pour over contents of filter

10 ounces Proof Spirits,

allowing it to fall on previous filtrate, and to this mixture add gradually 3 drachms Dilute Sulphuric Acid ; let it stand 24 hours and add 10 ounces Distilled Water and filter through a little powdered Pumice Stone. If not thoroughly soluble add a little more Salt of Tartar, and in six hours filter.

Produce two pints.

Lupuline Bitters.

1	ounce	Pale Cinchona Bark.
20	grains	Chilli Pods (or Capsicums).
3	ounces	Fresh Hops.
1½	,,	Columba Root.
1½	,,	Jamaica Ginger.
1	,,	Podophyllin Root.
10	,,	Pure Glycerine.
2½	pints	Spirit of Wine.
3	,,	Distilled Water

Mix the Glycerine, Water and Spirit, and then, having bruised the Roots and Barks, macerate in above for 7 days, shaking frequently ; strain, press, and filter, making up the product to six pints with water.

Dose.—One or two teaspoonfuls in a wineglass of gin, sherry, or water when required.

Syrup of Lemons.

6 large fresh Lemons.

Carefully cut off the rinds with a sharp knife (getting as little of the white part as possible) and macerate in 3 ounces Spirit of Wine for 24 hours; strain and press. Squeeze out the juice from the pulp, adding water enough to make 2½ pints, to this add 1½ drachms of Boracic Acid and set aside for 24 hours, then strain, and to the strained liquor add five ounces Loaf Sugar; heat to boiling and add 1½ ounces pure Citric Acid and the tincture made from rinds, and finally strain through flannel whilst hot.

A teaspoonful to a tumbler of water for a draught.

Gingeretta Compound.

Concentrated.

160	drops	Super Essence of Lemon.
1¼	ounces	Tincture of Capsicums.
12	,,	Essence of Ginger.
3½	,,	Pure Citric Acid.
5	,,	Burnt Sugar.

Water to make 30 ounces.

Dissolve Citric Acid in 12 ounces of water; mix Essence of Lemon with tincture; mix all together and make up to 30 fluid ounces with water.

To make Ginger Wine.

Dissolve 1½ lbs. of Loaf Sugar and six ounces Brown Sugar Candy in one gallon of water by the aid of heat, on cooling add 3 ounces Gingeretta Compound; stir well and set aside until cold.

To make Ginger Cordial use only quarter to half the quantity of water.

Peppermint Cordial.

80 drops English Oil of Peppermint.
½ pound Loaf Sugar.
4 fluid ounces Pure Glycerine.
30 grains Salicylic Acid.
1 pint Boiling Water.

Reduce two ounces Sugar to a fine powder and gradually add Oil of Peppermint, rubbing well in a mortar until thoroughly mixed and add remaining Sugar and Salicylic Acid, pour over this the Boiling Water, add Glycerine, and when cold filter through paper.

Soluble Essence of Lemon.

1¾ ounces Essence of Lemon.
6 ,, Rectified Spirit of Wine.
3 ,, Pure Glycerine.
4 ,, Pure Phosphate Calcium.
Distilled Water to make 1 pint.

Mix Essence of Lemon, Spirit of Wine, Glycerine, and eight ounces of Distilled Water, agitate briskly in a quart bottle for 10 minutes, and now introduce Phosphate of Calcium and again shake. Put in a filter and let it pass through twice. Now digest in filtrate for two or three days.—1½ ounces fresh Lemon Peel, and again filter.

Strawberry Syrup.

½ ounce Essence of Strawberry.
3 drachms ,, of Vanilla.
8 drops ,, of Ratafia.
¼ ounce Pure Citric Acid.

Strawberry Syrup.—Continued.

2	ounces Rose Water.
2	,, Cinnamon Water.
¼ to ½	,, Burnt Sugar.
2	pounds Loaf Sugar.
16	ounces Water.

Mix Rose, Cinnamon, and plain Water, and dissolve Acid and Sugar in them by aid of heat. Heat to boiling and add Essences on cooling, and strain through flannel.

One tablespoonful to a tumbler of plain or aerated water.

Orange Syrup.

4	ounces Tincture of Fresh Orange Peel.
20	drops Essence of Apricot.
¾	ounce Tartaric Acid.
30	grains Saffron Hay.
2	pounds Loaf Sugar.
1	pint Boiling Water.

Boil Saffron in the water and strain, then dissolve Sugar and Acid in strained liquor and heat to boiling. Mix Tincture with Essence, and add on cooling, if required a little darker, 20 or 30 drops of Burnt Sugar.

A tablespoonful to a tumbler of water, plain or aerated.

To make Tincture of Fresh Orange Peel: Three ounces Fresh Orange Peel (cut off thin rind only) and 10 ounces Spirits of Wine; macerate three days and filter.

Apricot Syrup.

¼ ounce Essence of Apricots
½ ,, ,, of Vanilla.
½ drachm ,, of Bitter Almonds.
1¼ ounces Tincture of Saffron.
¾ ,, Tartaric Acid.
2 pounds Loaf Sugar.
1 pint Water.

Dissolve Sugar and Acid in the water by the aid of heat, until it boils, then withdraw heat, and having mixed Essences with Tincture of Saffron, add to Syrup on cooling, but before cold, and strain through flannel.

One tablespoonful to a tumbler of plain or aerated water.

Cherry Syrup.

1 ounce Pure Citric Acid.
1 drachm Essence of Morella Cherry.
20 drops ,, of Ratafia.
3 drachms ,, of Vanilla.
½ ounce Tincture of Virginian Prune.
2 pounds Loaf Sugar.
½ ounce Bruised Cochineal.
1 pint Water.

First boil Cochineal in water to which Citric Acid has been added, strain, dissolve Sugar in this, and having mixed Essences with Tincture of Prune, add to Syrup on cooling. Filter if required bright.

One tablespoonful to a tumbler of plain or aerated water.

Two teaspoonfuls to a wine glass of brandy gives excellent Cherry Brandy.

Orange Bitters.

2	ounces	Fresh Orange Peel.
1	,,	,, Lemon ,,
½	,,	Angostura Bark.
⅛	,,	Chiretta ,,
¼	,,	Columba Root.
3	,,	Pure Glycerine.
10	,,	Spirit of Wine.

Distilled Water to make 20 ounces.

Let the Fresh Peels be cut very thin, bruise Barks, &c.; having mixed Spirit of Wine with Glycerine and seven ounces Distilled Water, digest ingredients in it for seven days, shaking frequently; strain, press, and filter, making up product to 20 ounces with Distilled Water.

Prunomel.

1	ounce	Fluid Extract of Liquorice.
8	,,	Clarified Honey.
6	,,	Pure Glycerine.
8	,,	Oxymel of Squills.
2	,,	Tincture of Virginian Prune.
¾	,,	Dilute Phosphoric Acid.
¾	,,	Chloric Ether.
8	drops	Essence of Orleans Plum.

Mix first four ingredients in a quart bottle and shake well, then having mixed Essence of Orleans Plum with Chloric Ether, introduce remaining ingredients, shaking well.

Doses.—Adults one or two teaspoonfuls three or four times a day.

Children under 12 years 1 teaspoonful in water.
" " 6 " ½ " "
" " 3 " 10 to 30 drops "
Three or four times a day.

Beverages.

See also pages 304 to 311.

DIRECTIONS FOR THE PREPARATION OF AERATED WATERS.

For Generator.

14 pounds of Whiting to 3 gallons of Water, and two pounds of Vitriol. Pour all in, and stir until made.

SYRUPS FOR BOTTLES.

Ginger Beer.

14 pounds Sugar.
9 quarts Water.
1¼ pounds Acetic Acid.
1 ounce Essence of Lemon.
½ „ „ of Ginger.
½ „ Tincture of Capsicums.

Pour Lemon and Ginger over the Sugar and Water, and lastly Acid. Dissolve and let stand one day. Add one ounce to each bottle.

Lemonade.

Make same as Ginger Beer, omitting Ginger and Capsicums.

Brandy Bitters.

3 pounds Sliced Gentian Root.
2 ,, Dried Orange Peel.
1 ,, Cardamom Seeds.
½ ,, Bruised Cinnamon.
2 ounces Cochineal.
10 pints Brandy.

Macerate for 14 days and strain.

Raspberry Brandy.

7 pounds Simple Syrup.
1 ounce Citric Acid.
1 ,, Essence of Raspberry.

Pour one pint Boiling Water upon the Citric Acid, and add Raspberry. Colour with Burnt Sugar and Essence of Cochineal.

Gingerade.

8 pounds Lump Sugar.
4 ,, Water.

Simmer over fire, and then add 3 ounces Tartaric Acid. Dissolve in a little cold water 3 ounces Essence of Ginger, 1 drachm Tincture of Cayenne, and add.

Spruce Beer.

6 quarts Boiling Water.
4 pounds Malt.

Macerate for six hours, squeeze the water out, and to the Malt Liquor add

3 pounds Treacle.
3 ounces Spanish Juice.
4 ,, Ginger.
6 ,, Liquorice Powder.

Boil all together. Boil in a separate vessel in a quart of water one ounce Hops, and in this Hop Water again boil and strain and work the whole together. Ferment with Barm, and add one ounce Essence of Spruce.

Scotch Beer.

Add one peck Malt to 4 gallons of Boiling Water and let it mash for 8 hours, and then strain, and in the strained liquor boil

4 ounces Hops.
1 ,, Coriander Seeds.
1 pound Honey.
2 ounces Orange Peel.
1 ,, Bruised Ginger.

Boil for half-an-hour, then strain and ferment in the usual way.

Champagne Punch.

10 pounds Brown Sugar.
12 ,, White Sugar.
Dissolved in 9 gallons of Water.

Heat the liquor to 75° Fahr., and add yeast, and when the fermentation has commenced add one gallon of Perry, and three pints of Brandy.

Bottle before fermentation has ceased.

Lime Juice Cordial.

4 ounces Glucose.
16 ,, Syrup.
16 ,, Crude Lime Juice.
1 ,, Orange Flower Water.
1 drachm Essence of Lemon.

Horehound Beer.

1 ounce Horehound.
1 pound Coarse Sugar.

Pour upon this one gallon of water, and boil for half-an-hour. When lukewarm, mix a tablespoonful of yeast, and bottle off next day.

Ginger Beer.

3 pounds White Sugar.
2 ounces Bruised Ginger.
1 ,, Cream of Tartar.
4 Sliced Lemons.
4 gallons Boiling Water.
8 ounces Yeast.

Pour the water on the four first-named ingredients and infuse for two hours, then strain and add the Yeast, and when the fermentation has continued for two hours, put into Stone Bottles.

Hop Bitter Beer.

2	ounces	Coriander Seeds.
4	,,	Orange Peel.
1	,,	Ginger.
½	,,	Gentian Root.

Boil in five gallons of Water for half-an-hour, then strain and put into the liquor four ounces Hops and 3 pounds of Sugar, and simmer for 15 minutes, then add sufficient Yeast and bottle when ready.

Vinegar.

3	pounds	Crystallized Raisins.
3	,,	Ground Malt.
¼	,,	Cream of Tartar.
2	,,	Treacle.

Pour upon this four gallons of boiling water, and allow it to mash for six or eight hours, well stirring, and then run the liquid into another vessel, adding two ounces Sulphuric Acid, and 12 gallons of Acetic Acid. Colour with Burnt Sugar, and rack into a cask, then allow it to settle for three days and rack into another, and it is ready for use.

Memoranda.

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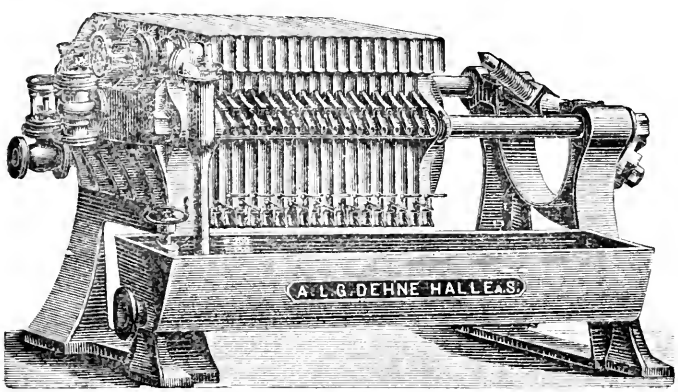

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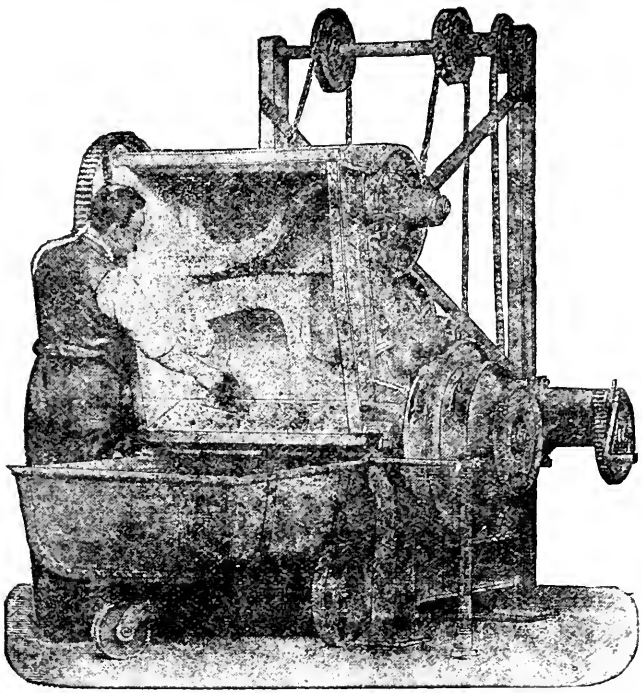

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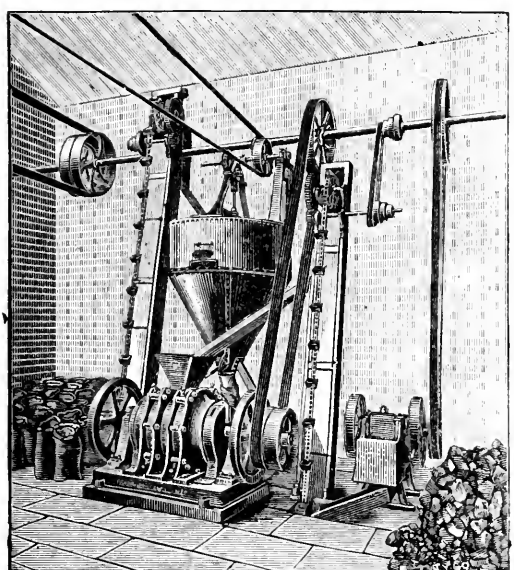

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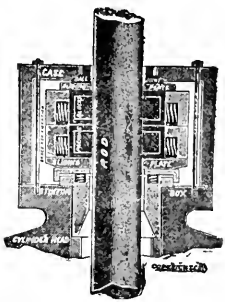

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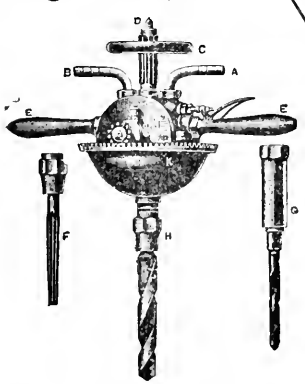

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Claimed for this Oven heated on a new & improved principle, and adaptable to all purposes where a considerable heat is required either for baking or drying.

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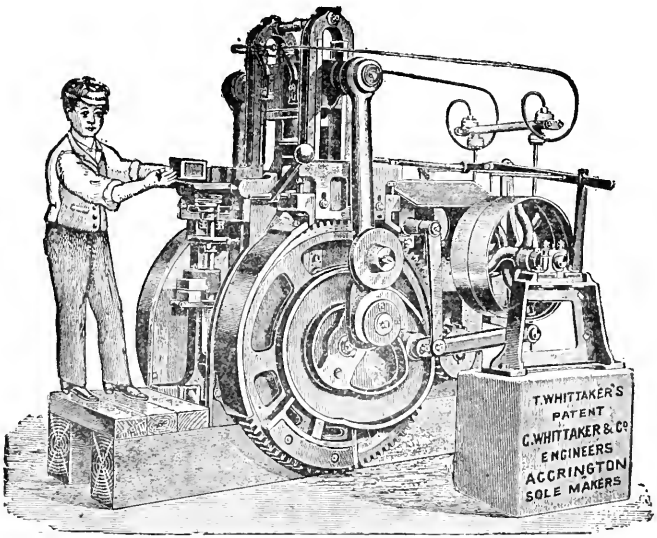

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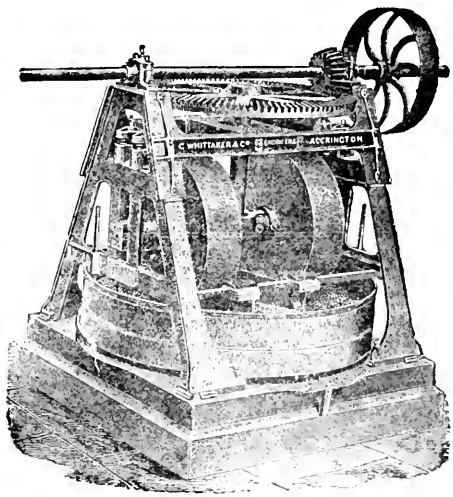

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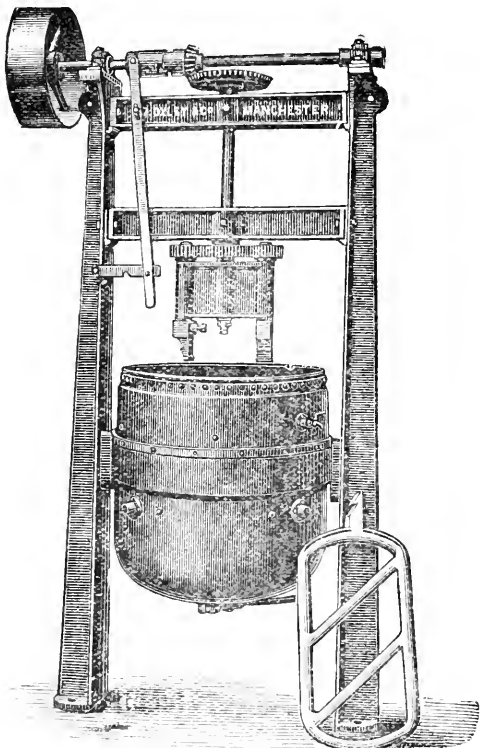

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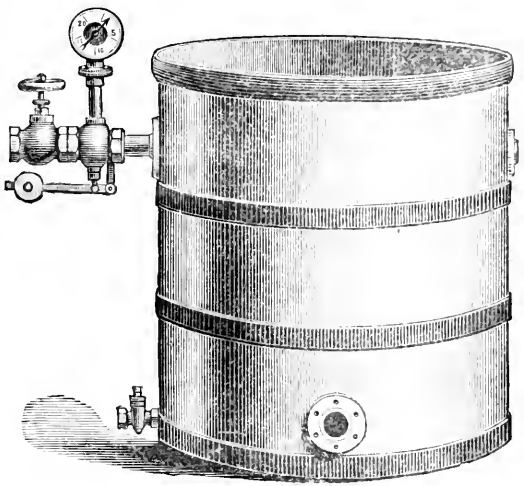

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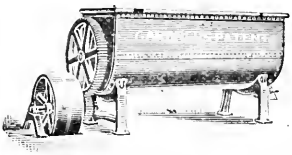

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FOR SIMULTANEOUSLY

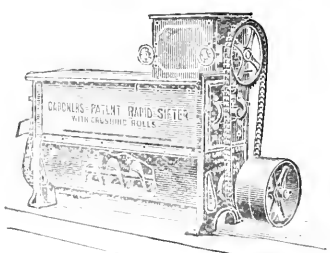
Reducing, Sifting, and Mixing all kinds of Dry and Lumpy Powders.

Made in a variety of styles for Hand or Power, *and for working without loss by escape of dust.*

PRICES to suit large or small users, ranging from 48s. to £120 each, and having capacities from 4 lbs. to ½ ton of powder at an operation.

These will be found most serviceable machines for making up many of the Powders from the Recipes given in this Work.

Send for our latest Catalogue. Suitable machines quoted for on hearing requirements.



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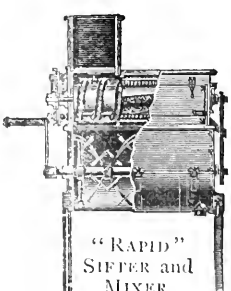

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These Ovens are always ready, night or day; are very Clean, being heated from outside; Economical in Fuel; require little attention; Heat regulated and under the Control of the Baker; suitable for all classes of Goods; give a beautiful bloom; are Easily Managed.

TESTIMONIALS.

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Dear Sir,—I have much pleasure in stating that the ovens have been working satisfactorily; the bread being well baked and the colour all that can be desired. They are also perfectly continuous, being always ready when required. You may refer intending customers to me at any time.—I am, yours truly,

ARTHUR W. DRAPER.

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POOLE, DORSET,
MR. KIRKBY, *Aug., 1894.*

Dear Sir, . . . I can turn more out of this oven than I could do with two old-fashioned ovens, and with much less labour and fuel. —Yours truly,

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Sir,—We are very much pleased with the ovens you built; they have not failed in the least. Having three shops now they have been well tried, and done their work well.

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"Unquestionably effective. We have practically tested it."

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Casks of 20 Galls. and upwards	- 1s. 6d.
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Carriage paid on 5 *Galls. and upwards. Samples Free.*

Charge for Drums: 3 Galls, 2/6; 5 Galls, 3/-; 10 Galls, 4/6.

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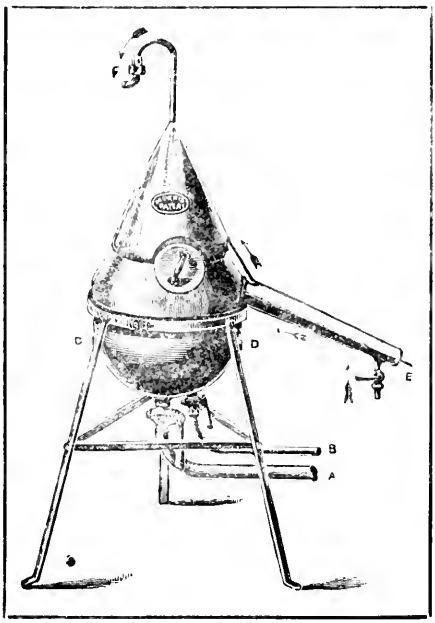
It puzzled many at the recent Drug and Chemists' Exhibition, how

MORRIS & WETHERED'S

PATENT STILLS



Could possibly distil, as they did, such a large and continuous stream without attention, or apparently any means of condensation; but when the Invention was explained, they wondered at its simplicity and efficiency.

Morris & Wethered's Patent Stills are attracting great attention throughout the Globe; and in order to avoid delay, we advise those who are contemplating favouring us with their orders, to do so at once.

Full Particulars and Prices on application to the Sole Manufacturers,

LLEWELLINS & JAMES,
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Superior to the best leather.

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Great Durability.
Will not Slip.
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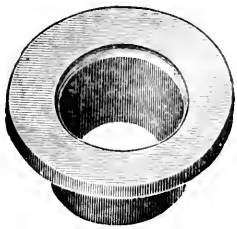

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Yours most respectfully,

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(Signed) *per* J. H. W.

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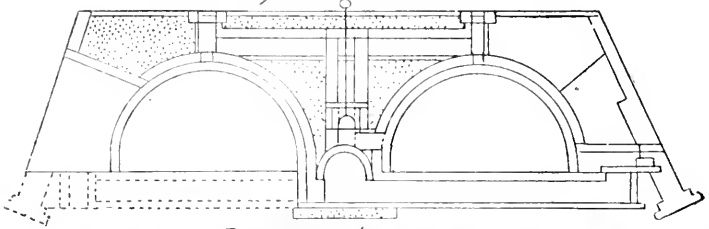

PATENT No. 24,946.

The 'PERFECTED' KILN

(WARREN'S PATENT, No. 24,946, 1894), Being an

Improvement on the Perfect Kiln,

AND HAVING ADVANTAGES OVER ALL OTHER KILNS.

It has both Up and Down Draught in the same Kiln, which cannot be claimed by any other System.

FOR EVERY CLASS OF GOODS, LIME OR CEMENT.

In the "PERFECTED KILN" the Patentee claims for his Invention what has never yet been accomplished by the "PERFECT" or any other Kiln, viz. : The Complete Drying of all Goods in the Chambers, both at the bottom and the top, by using the waste heat from the cooling chambers to dry the Goods before the fire reaches the same, and thereby retaining their natural colour—nearly free from stains.

The Patentee having had **25 years practical experience** in Patent Kilns and Brick making, he is in a position to thoroughly explain his system, and give sound advice to those contemplating either building New Kilns, or converting old ones.

The expense of erection is less and the mode of working more simple than any other Continuous Kiln.

The above Kiln may now be seen in work at Holbrook Creek, near Ipswich, with the most unqualified success. This is no bounce, but sober facts ! Anyone having a Continuous Kiln, **New or Old**, by whatever name it may be called, that is not giving satisfaction, **write to Warren**, who can alter it to his **Own System of Flues**, so arranged for working as to be absolutely impossible to get out of order. **Constant Expansion and Contraction** must take place with every Kiln, therefore **all Hot Air Flues** that are built anywhere over the chamber arches cannot fail to become leaky, and will thereby be useless to carry hot air.

WARREN'S

LIQUID FUEL SPRAY INJECTOR

(Patent No. 9,607),

For Boilers, Furnaces, or Kilns.

AGENCY SUPERINTENDENT FOR

THOMAS'S PATENT KILN

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This is an entirely new arrangement of Continuous Kilns for producing First-class Glazed and Enamelled Goods of every description.

EQUAL TO ANY AT PRESENT IN THE MARKET.

At a saving of at least 50 per cent. of fuel!

Every information supplied by the Patentee and Sole Proprietor of the Perfected Kiln—

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SCREENING MACHINERY

FOR ALL KINDS OF MATERIAL.

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THE "MULTIPLE" GRINDER

Is the best for very fine and impalpable grinding.

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Is the most perfect machine for separating Iron and Steel from any other material.

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Provides a new mechanical motion by which oscillating, shaking, and gyrating machinery can be worked **without the usual objectionable and harmful vibration of the whole fabric and buildings connected with such machinery,** and is the best method of working Coal Screens, Separators, Concentrators, and all screening machinery.

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